

2006 Buick Lucerne CXS

2006 ACCESSORIES & EQUIPMENT Seats - Lucerne

2006 ACCESSORIES & EQUIPMENT

Seats - Lucerne

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Front Center Seat Armrest Screw	3 N.m	25 lb in
Front Center Seat Bolt	9 N.m	80 lb in
Front Seat Adjuster Memory Module Screw	3 N.m	25 lb in
Front Seat Back Blower Motor Screws	3 N.m	25 lb in
Front Seat Back Frame to Recliner Bolts	45 N.m	33 lb ft
Front Seat Bolt	45 N.m	33 lb ft
Front Seat Cushion Blower Motor Screw	3 N.m	25 lb in
Front Seat Cushion Frame Nut	9 N.m	80 lb in
Front Seat Motor Bolts	4 N.m	36 lb in
Heat and Cool Seat Cushion Module Screw	3 N.m	25 lb in
Massaging Lumbar Control Module Screw	3 N.m	25 lb in
Power Recliner Motor to Seat Back Bolt	9 N.m	80 lb in
Rear Seat Armrest Bolt	2 N.m	18 lb in
Rear Seat Back Cushion Screw	2 N.m	18 lb in
Rear Seat Heater Control Module Screw	2 N.m	18 lb in
Rear Seat Lumbar Control Module Screw	2 N.m	18 lb in

SCHEMATIC AND ROUTING DIAGRAMS

DRIVER SEAT SCHEMATICS

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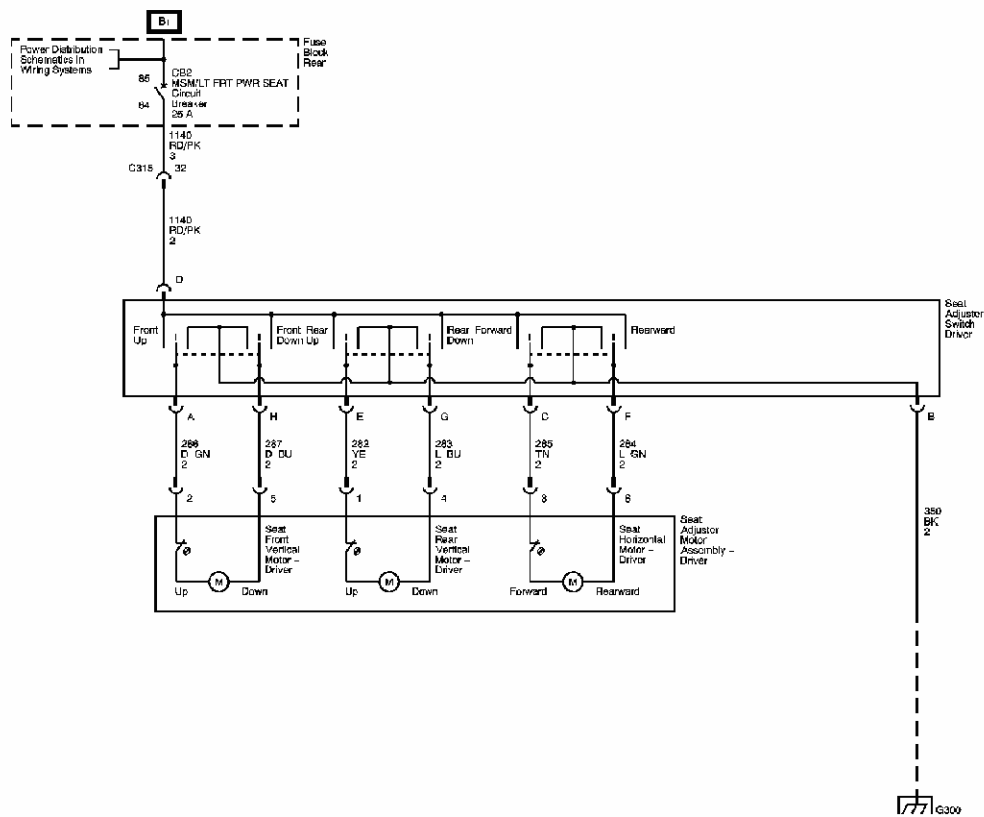


Fig. 1: Driver Seat Schematic (w/o A45)
Courtesy of GENERAL MOTORS CORP.

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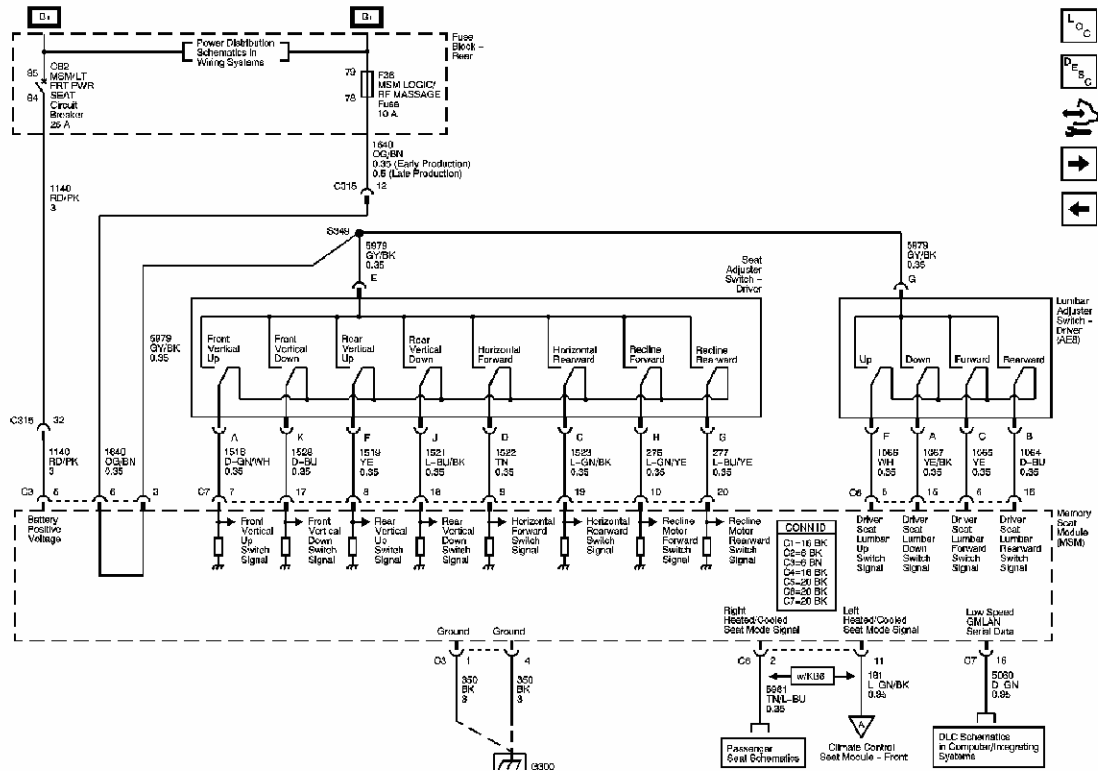


Fig. 2: Driver Seat Schematic (w/A45)
Courtesy of GENERAL MOTORS CORP.

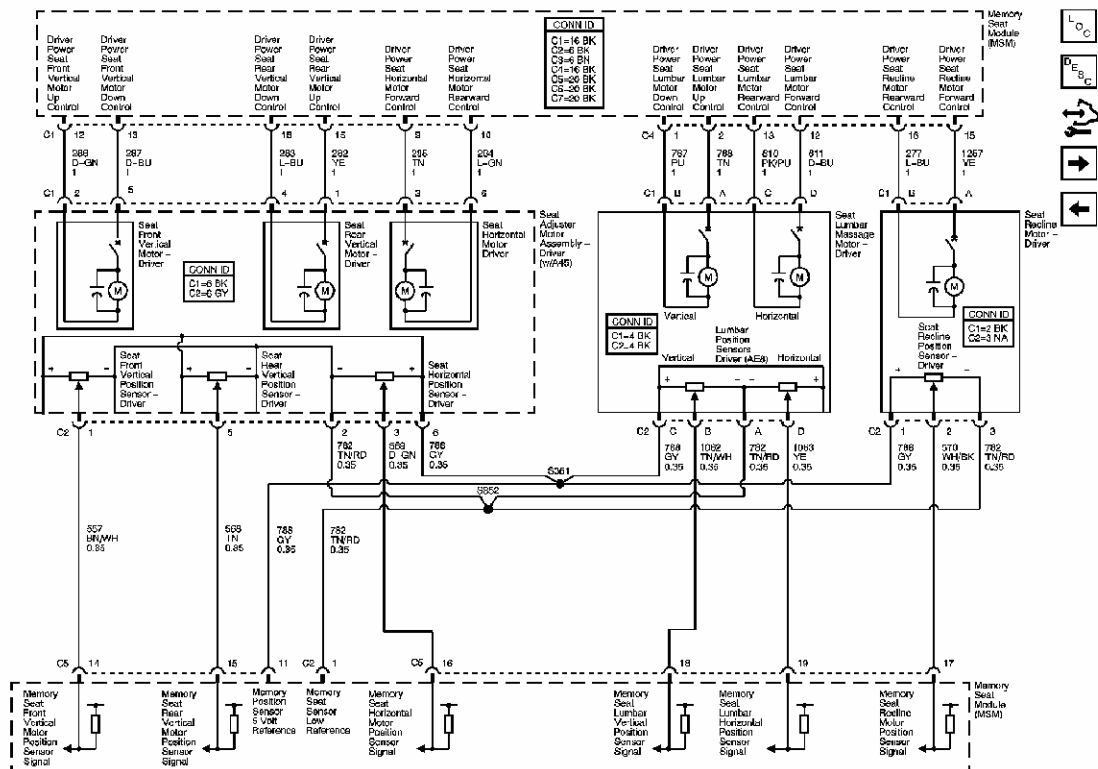


Fig. 3: Position Sensors Schematic
Courtesy of GENERAL MOTORS CORP.

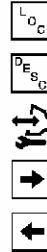
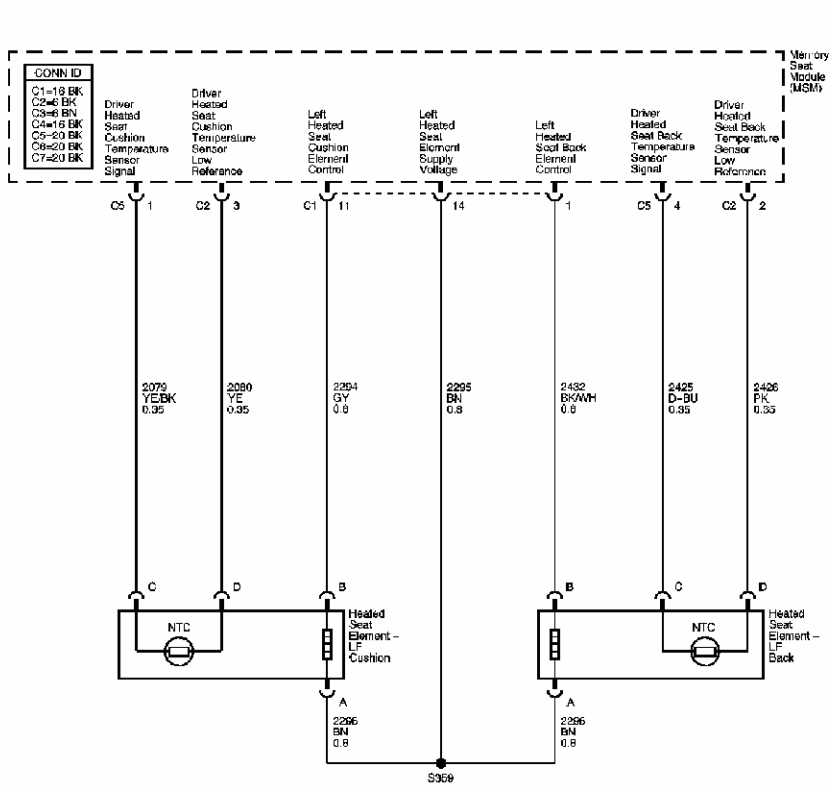


Fig. 4: Heated Seat Schematic (KA1)
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Fig. 7: Passenger Seat Schematic (w/o A45)
Courtesy of GENERAL MOTORS CORP.

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Courtesy of GENERAL MOTORS CORP.

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COMPONENT LOCATOR

POWER SEAT COMPONENT VIEWS

Fig. 11: Identifying Driver Seat Components (KB6)
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 11

Callout	Component Name

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1	Seat Back Ventilation Heat and Cool Module - Driver (KB6)
2	Inflatable Restraint Side Impact Module - Left
3	Seat Lumbar Massage Motor - Driver (AM3)
4	Lumbar Adjuster Switch - Driver (AE8, A45)
5	Seat Adjuster Switch - Driver (AE8, A45)
6	Seat Adjuster Motor Assembly - Driver (AE8, A45)
7	Memory Seat Module (MSM)
8	Auxiliary Power Outlet
9	Seat Cushion Ventilation Heat and Cool Module - Driver (KB6)
10	Seat Recline Motor - Driver (AE8, A45)
11	Seat Lumbar Motor - Driver (AE8)

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Fig. 12: Identifying Passenger Seat Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 12

Callout	Component Name
1	Inflatable Restraint Side Impact Module - Right
2	Inflatable Restraint Passenger Presence System (PPS) Module
3	Inflatable Restraint Seat Position Sensor (SPS) - Right
4	Seat Adjuster Motor Assembly - Front Passenger (AH8)
5	Seat Adjuster Switch - Passenger (AG2, AH8)
6	Inflatable Restraint Passenger Presence System (PPS) Sensor

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Fig. 13: Identifying Passenger Door Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 13

Callout	Component Name
1	Outside Rearview Mirror - Passenger
2	Door Frame
3	Door Latch Assembly - Front Passenger
4	Window Motor - Driver
5	Front Passenger Door Module (FPDM)
6	Speaker - RF Door
7	Heated and Cooled Seat Switch - Front Passenger (KA1, KB6)

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Fig. 14: Identifying Driver Door Components
Courtesy of **GENERAL MOTORS CORP.**

Callouts For Fig. 14

Callout	Component Name
1	Door Frame
2	Heated and Cooled Seat Switch - Driver (KA1, KB6, A45)
3	Outside Rearview Mirror - Driver
4	Speaker - LF Door
5	Driver Door Module (DDM)
6	Window Motor - Driver
7	Door Latch Assembly - Driver

POWER SEAT CONNECTOR END VIEWS

Climate Control Seat Module - Front C1 (KB6)

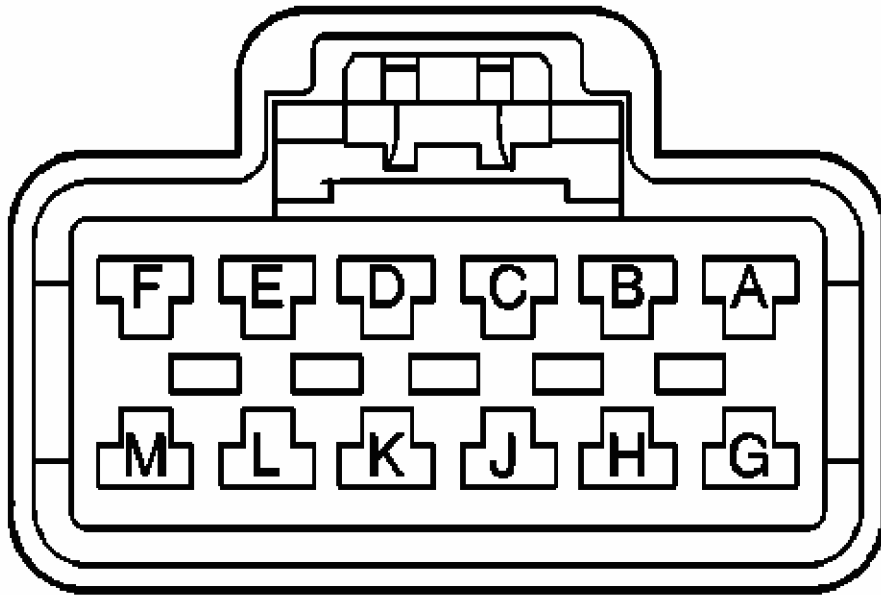


Fig. 15: Front Climate Control Seat Module C1 (KB6) Connector End View
Courtesy of **GENERAL MOTORS CORP.**

Power Seat Connector End Views

Connector Part Information

- OEM: 15326110
- Service: 15306171
- Description: 12-Way F 280 GT Series (BK)

Terminal Part Information

- Pins: A, B, C, D, G, H, J, K
- Terminal/Tray: 15304711/8
- Core/Insulation Crimp: 2/A
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)
- Pins: E, M
- Terminal/Tray: 15304713/19
- Core/Insulation Crimp: F/D
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

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Climate Control Seat Module - Front C1 (KB6)

Pin	Wire Color	Circuit No.	Function
A	L-GN/WH	6227	Passenger Seat Cushion Heated/Cool Ventilation Module Heat Control
B	L-GN/OG	6228	Passenger Seat Cushion Heated/Cool Ventilation Module Cool Control
C	L-BU	6225	Passenger Seat Back Heated/Cool Ventilation Module Heat Control
D	TN/OG	6226	Passenger Seat Back Heated/Cool Ventilation Module Cool Control
E	YE/GY	1440	Battery Positive Voltage
F	-	-	Not Used
G	PK	7022	Driver Seat Cushion Heated/Cooled Ventilation Module Heat Control
H	L-GN	6216	Driver Seat Cushion Heated/Cool Ventilation Module Cool Control
J	PU	7023	Driver Seat Back Heated/Cool Ventilation Module Heat Control
K	TN/PU	7024	Driver Seat Back Heated/Cool Ventilation Module Cool Control
L	-	-	Not Used
M	BK	350	Ground

Climate Control Seat Module - Front C2 (KB6)

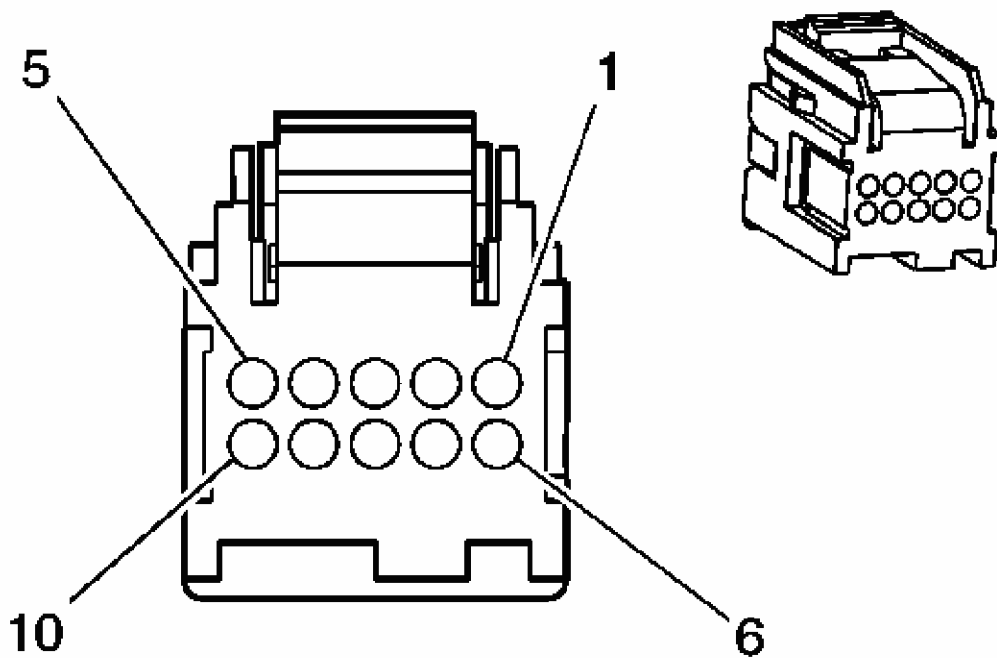


Fig. 16: Front Climate Control Seat Module C2 (KB6) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 15431080
- Service: 88988292
- Description: 10-Way F Micro-Pack 64 Series (BK)

Terminal Part Information

- Pins: 1, 2, 3, 4, 5, 7, 8, 9, 10
- Terminal/Tray: 15359541/4
- Core/Insulation Crimp: M/M
- Release Tool/Test Probe: 15381651-2/J-35616-64B (L-BU)

Climate Control Seat Module - Front C2 (KB6)

Pin	Wire Color	Circuit No.	Function
1	BN	741	Run Ignition 3 Voltage

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2	GY	2434	Passenger Seat Cushion Temperature Sensor Signal
3	PK	2435	Passenger Seat Cushion Temperature Low Reference
4	TN	2436	Passenger Seat Back Temperature Sensor Signal
5	TN/GY	2482	Passenger Seat Back Temperature Low Reference
6	-	-	Not Used
7	OG/PK	7018	Driver Seat Cushion Temperature Sensor Signal
8	OG/WH	7019	Driver Seat Cushion Temperature Sensor Low Reference
9	YE/BN	7020	Driver Seat Back Temperature Sensor Signal
10	YE/WH	7021	Driver Seat Back Temperature Sensor Low Reference

Climate Control Seat Module - Front C3 (KB6)

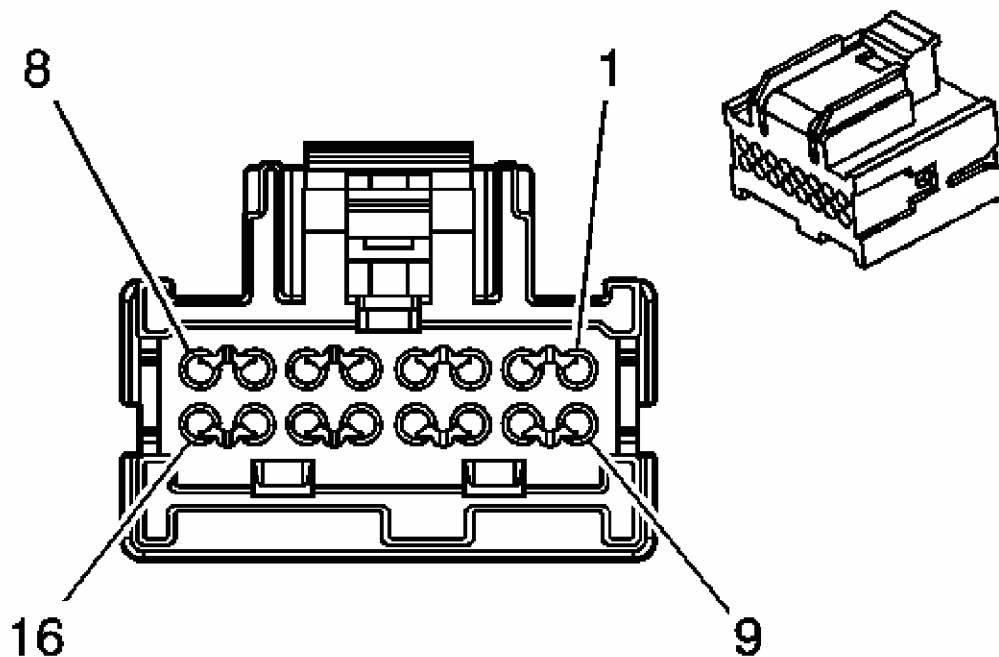


Fig. 17: Front Climate Control Seat Module C3 (KB6) Connector End View
Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 15394150
- Service: See Catalog
- Description: 16-Way F (BK)

Terminal Part Information

- Pins: 3, 4, 6, 7, 8, 9, 11, 12, 14, 15, 16
- Terminal/Tray: 15359541/4
- Core/Insulation Crimp: M/M
- Release Tool/Test Probe: 15381651-2/J-35616-64B (L-BU)

Climate Control Seat Module - Front C3 (KB6)

Pin	Wire Color	Circuit No.	Function
1-2	-	-	Not Used
3	PU	6229	Passenger Seat Cushion Blower Speed Control
4	BN	6223	Passenger Seat Back Blower Speed Control
5	-	-	Not Used
6	TN/L-BU	5961	Right Heated/Cooled Seat Mode Signal
7	TN/PK	6446	Passenger Seat Blower Low Reference
8	D-BU/WH	6222	Passenger Seat Blower Supply Voltage
9	WH/BK	5043	Keyword 2000 Serial Data
10	-	-	Not Used
11	BK/TN	6218	Driver Seat Cushion Blower Speed Control
12	GY/PU	6211	Driver Seat Back Blower Speed Control
13	-	-	Not Used
14	L-GN/BK	181	Left Heated/Cooled Seat Mode Signal
15	D-GN	6238	Driver Seat Blower Low Reference

16

D-BU

6143

Driver Seat Blower Supply Voltage

Heated and Cooled Seat Switch - Driver (KA1/KB6)

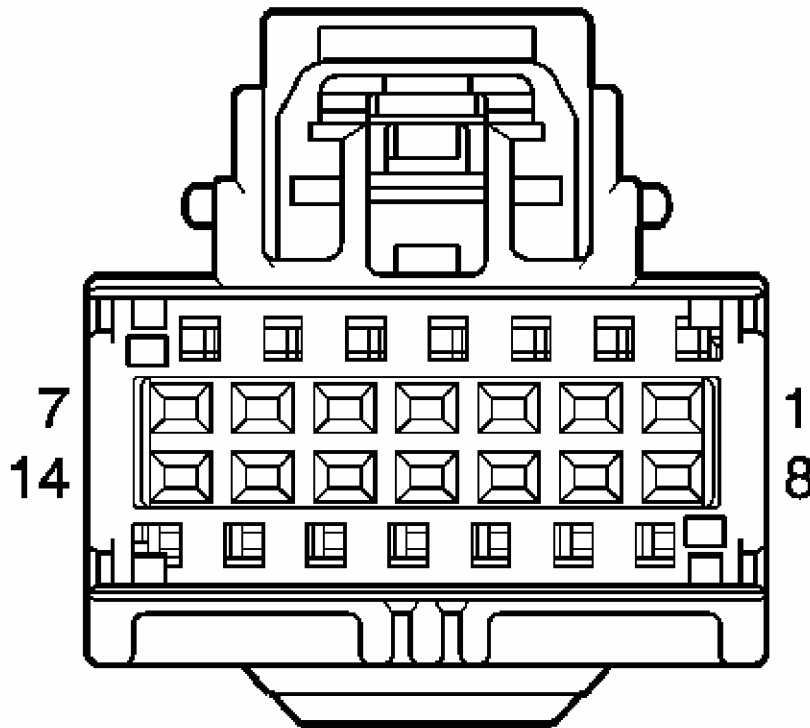


Fig. 18: Driver Heated and Cooled Seat Switch (KA1/KB6) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 7283-9065-40
- Service: See Catalog
- Description: 14-Way F (GY)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

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Heated and Cooled Seat Switch - Driver (KA1/KB6)

Pin	Wire Color	Circuit No.	Function
1	GY/BK	5979	Memory Function Switch Supply Voltage (A45)
2	BN	6173	Driver Heated Seat Back Cushion Indicator Control
3	PK	6097	Driver Heated Seat Switch Low Reference
4	PU	6174	Driver Heated Seat Back Only Mode Indicator Control
5	YE/PU	6176	Driver Heated Seat Switch Lamp Dimming
6	WH/BK	6177	Driver Heated Seat Medium Indicator Control
7	OG	6178	Driver Heated Seat Cool Indicator Control (KB6)
8	D-BU	6172	Driver Heated Seat Back Cushion Signal
9	TN	612	Memory Recall Switch Signal (A45)
10	-	-	Not Used
11	GY	6175	Driver Heated Seat Back Only Mode Switch Signal
12	D-GN	1661	Driver Heated Seat High Indicator Control
13	L-BU	1662	Driver Heated Seat Low Indicator Control
14	L-GN/BK	6098	Driver Heated Seat Cool Switch Signal (KB6)

Heated and Cooled Seat Switch - Front Passenger (KA1/KB6)

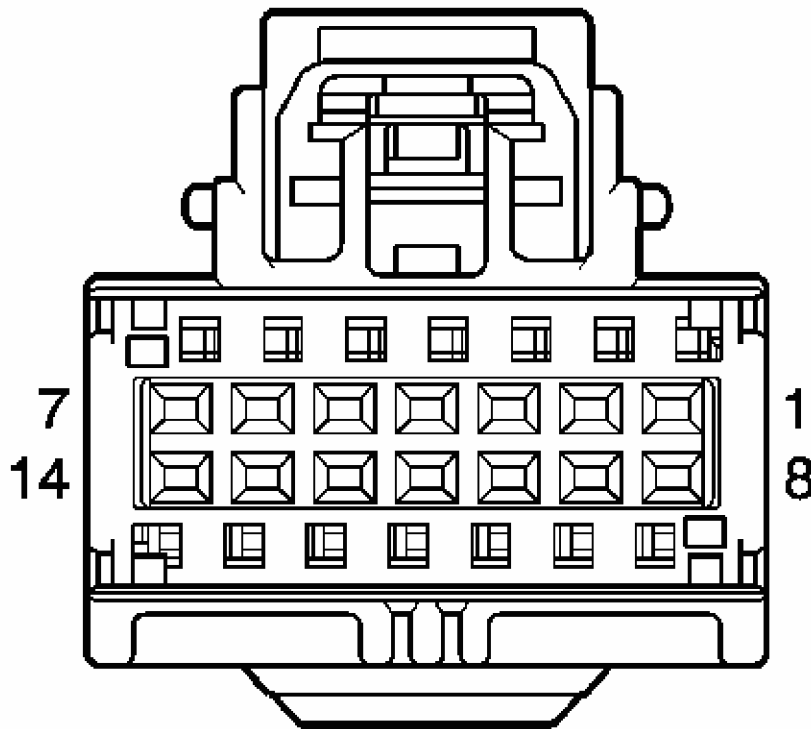


Fig. 19: Front Passenger Heated & Cooled Seat Switch (KA1/KB6) Connector End View

Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 7283-9065-40
- Service: See Catalog
- Description: 14-Way F (GY)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Heated and Cooled Seat Switch - Front Passenger (KA1/KB6)

Pin	Wire Color	Circuit No.	Function
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1	OG	6186	Passenger Heated Seat Cool Indicator Control (KB6)
2	WH/BK	6185	Front Passenger Heated Seat Medium Indicator Control
3	L-BU	6183	Front Passenger Heated Seat Switch Lamp Dimming
4	PU	6181	Passenger Heated Seat Back Only Mode Indicator Control
5	PK	6184	Front Passenger Heated Seat Switch Low Reference
6	BN	6179	Passenger Heated Seat Back Cushion Indicator Control
7	-	-	Not Used
8	TN/D-BU	6187	Passenger Heated Seat Cool Switch Signal (KB6)
9	TN	1686	Front Passenger Heated Seat Low Indicator Control
10	YE	1685	Front Passenger Heated Seat High Indicator Control
11	GY	6182	Passenger Heated Seat Back Only Mode Switch Signal
12-13	-	-	Not Used
14	D-BU	6180	Passenger Heated Seat Back Cushion Switch Signal

Heated Seat Element - LF Back (KA1)

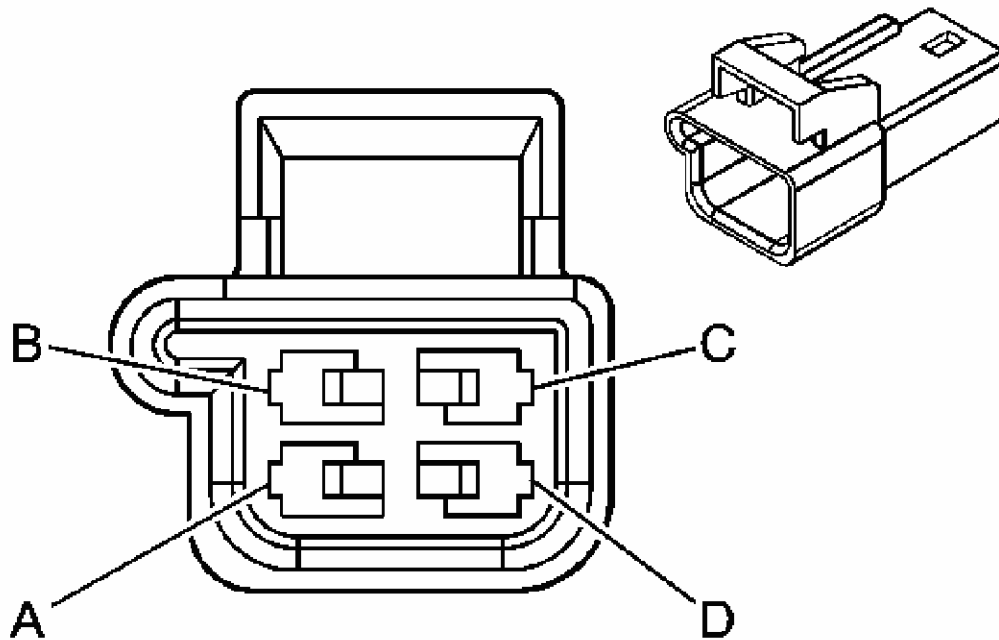


Fig. 20: Left Front Heated Seat Back Element (KA1) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 12064761
- Service: See Catalog
- Description: 4-Way M Metri-Pack 150 Series (BK)

Terminal Part Information

- Pins: A, B, C, D
- Terminal/Tray: 12047581/2
- Core/Insulation Crimp: Pins A, B - E/A
- Core/Insulation Crimp: Pins C, D - E/C
- Release Tool/Test Probe: 12094429/J-35616-3 (GY)

Heated Seat Element - LF Back (KA1)

Pin	Wire Color	Circuit No.	Function
			Left Heated Seat Element Supply

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A	BN	2295	Voltage
B	BK/WH	2432	Left Heated Seat Back Element Control
C	D-BU	2425	Driver Heated Seat Back Temperature Sensor Signal
D	PK	2426	Driver Heated Seat Back Temperature Sensor Low Reference

Heated Seat Element - LF Cushion (KA1)

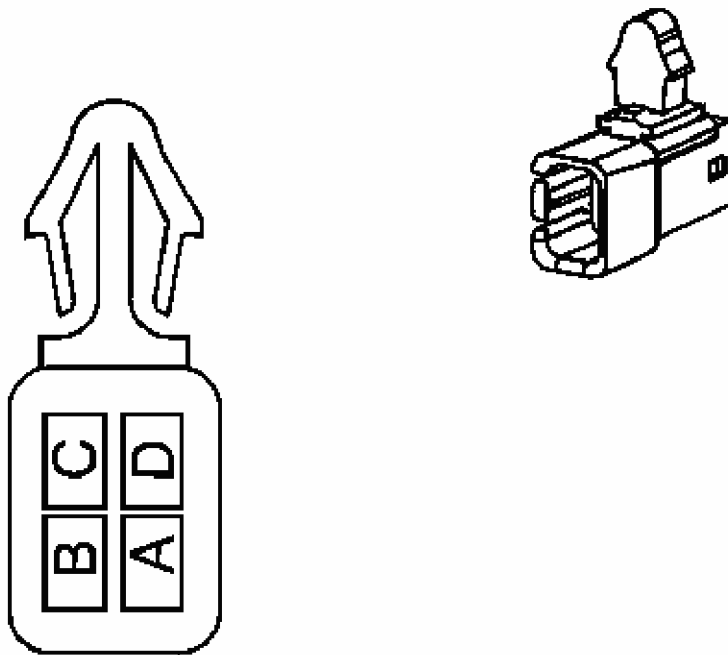


Fig. 21: Left Front Heated Seat Cushion Element (KA1) Connector End View
Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 12066498
- Service: 12085536
- Description: 4-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

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2006 ACCESSORIES & EQUIPMENT Seats - Lucerne

- Pins: A, B, C, D
- Terminal/Tray: 12047581/2
- Core/Insulation Crimp: Pins A, B - E/A
- Core/Insulation Crimp: Pins C, D - E/C
- Release Tool/Test Probe: 12094429/J-35616-3 (GY)

Heated Seat Element - LF Cushion (KA1)

Pin	Wire Color	Circuit No.	Function
A	BN	2295	Left Heated Seat Element Supply Voltage
B	GY	2294	Left Heated Seat Cushion Element Control
C	YE/BK	2079	Driver Heated Seat Cushion Temperature Sensor Signal
D	YE	2080	Driver Heated Seat Cushion Temperature Sensor Low Reference

Heated Seat Element - RF Back (KA1)

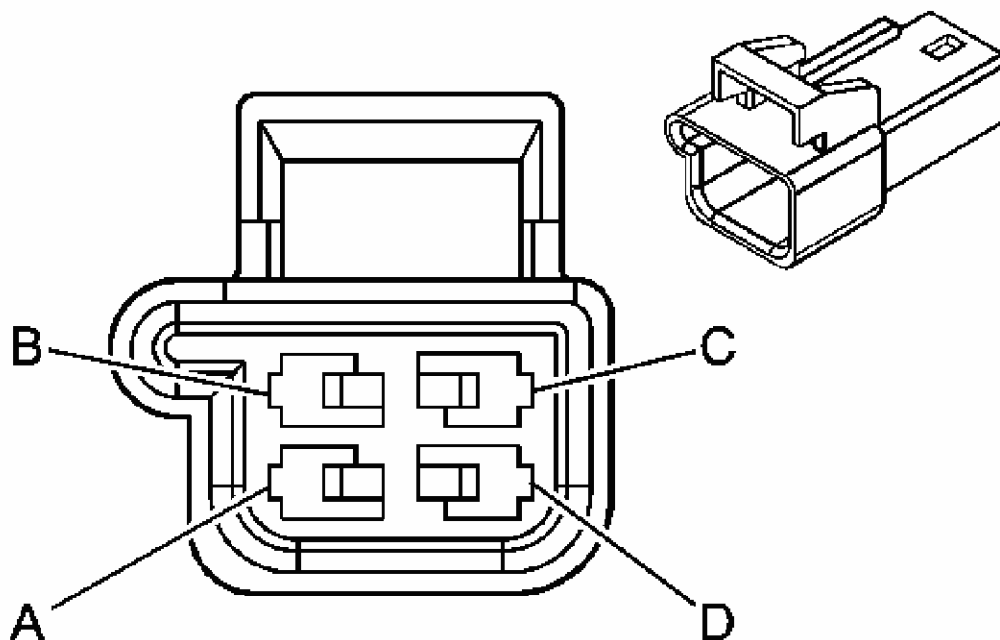


Fig. 22: Right Front Heated Seat Back Element (KA1) Connector End View

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Courtesy of **GENERAL MOTORS CORP.**

Power Seat Connector End Views

Connector Part Information

- OEM: 12064761
- Service: See Catalog
- Description: 4-Way M Metri-Pack 150 Series (BK)

Terminal Part Information

- Pins: A, B, C, D
- Terminal/Tray: 12047581/2
- Core/Insulation Crimp: Pins A, B - E/A
- Core/Insulation Crimp: Pins C, D - E/C
- Release Tool/Test Probe: 12094429/J-35616-3 (GY)

Heated Seat Element - RF Back (KA1)

Pin	Wire Color	Circuit No.	Function
A	TN/PU	7024	Right Heated Seat Element Supply Voltage
B	PU	7023	Right Heated Seat Back Element Control
C	YE/BN	7020	Right Seat Back Temperature Sensor Signal
D	YE/WH	7021	Right Seat Back Temperature Sensor Low Reference

Heated Seat Element - RF Cushion (KA1)

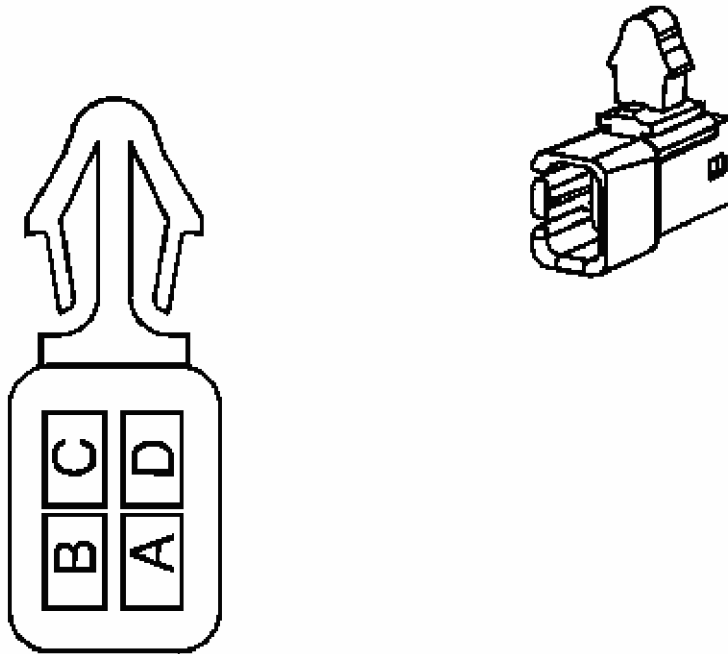


Fig. 23: Right Front Heated Seat Cushion Element (KA1) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 12066498
- Service: 12085536
- Description: 4-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Pins: A, B, C, D
- Terminal/Tray: 12047581/2
- Core/Insulation Crimp: Pins A, B - E/A
- Core/Insulation Crimp: Pins C, D - E/C
- Release Tool/Test Probe: 12094429/J-35616-3 (GY)

Heated Seat Element - RF Cushion (KA1)

Pin	Wire Color	Circuit No.	Function
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A	TN/PU	7024	Right Heated Seat Element Supply Voltage
B	PK	7022	Right Heated Seat Cushion Element Control
C	OG/PK	7018	Right Seat Cushion Temperature Sensor Signal
D	OG/WH	7019	Right Seat Cushion Temperature Sensor Low Reference

Lumbar Adjuster Switch - Driver (AE8, A45)

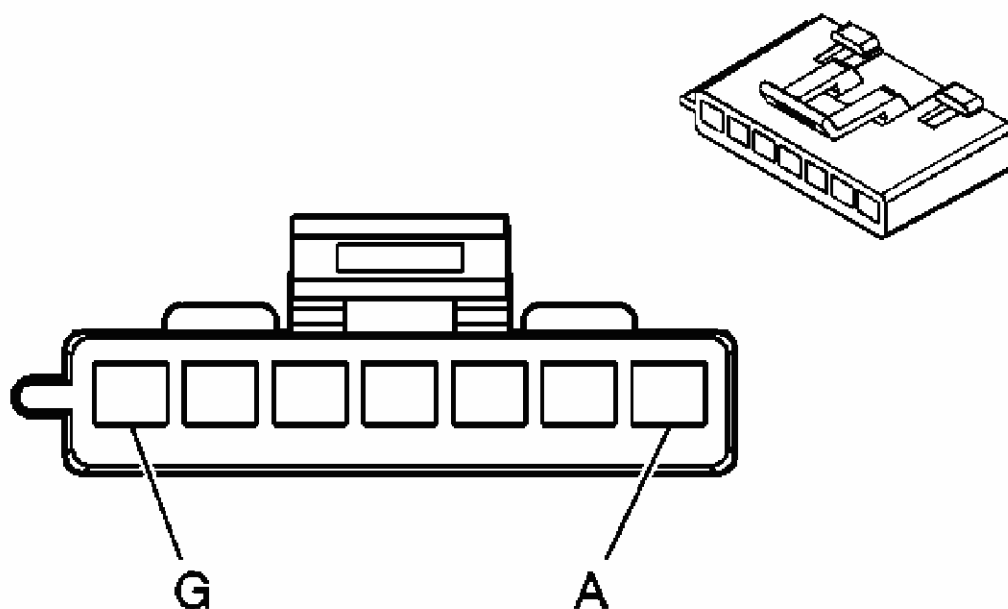


Fig. 24: Driver Seat Lumbar Adjuster Switch (w/AE8/A45) Connector End View
Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 12052854
- Service: 88953358
- Description: 7-Way F Metri-Pack 280 Series (BK)

Terminal Part Information

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- Pins: A, B, C, F, G
- Terminal/Tray: 12034046/2
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 12094430/J-35616-4A (PU)

Lumbar Adjuster Switch - Driver (AE8, A45)

Pin	Wire Color	Circuit No.	Function
A	YE/BK	1067	Driver Seat Lumbar Down Switch Signal
B	D-BU	1064	Driver Seat Lumbar Rearward Switch Signal
C	YE	1065	Driver Seat Lumbar Forward Switch Signal
D-E	-	-	Not Used
F	WH	1066	Driver Seat Lumbar Up Switch Signal
G	GY/BK	5979	Memory Seat Switch High Reference

Lumbar Adjuster Switch - Passenger (AH8)

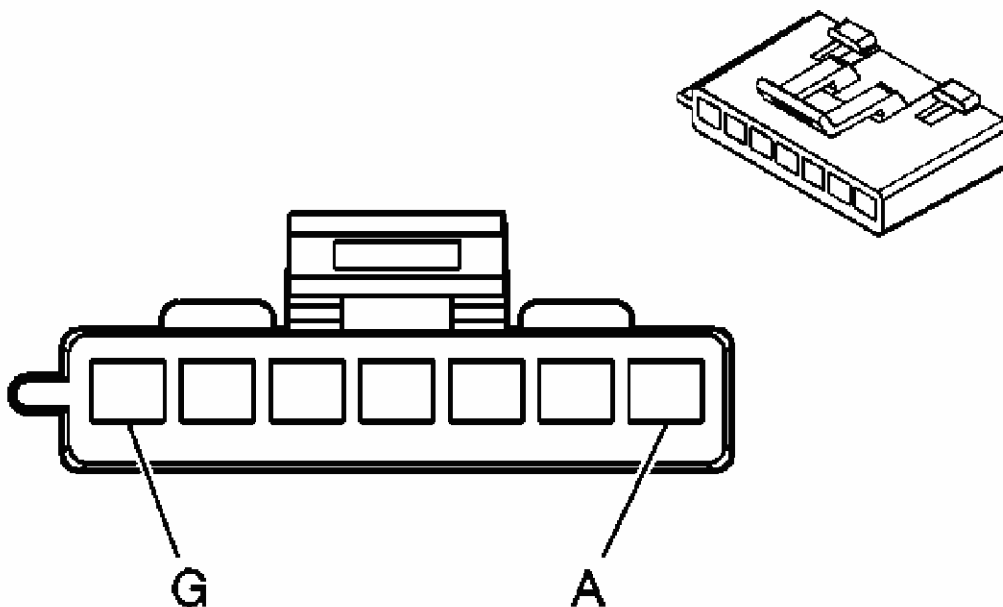


Fig. 25: Passenger Seat Lumbar Adjuster Switch (AH8) Connector End View

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Courtesy of **GENERAL MOTORS CORP.**

Power Seat Connector End Views

Connector Part Information

- OEM: 12052854
- Service: 88953358
- Description: 7-Way F Metri-Pack 280 Series (BK)

Terminal Part Information

- Pins: A, B, C, E, F, G
- Terminal/Tray: 12015858/4
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: 12094430/J-35616-4A (PU)

Lumbar Adjuster Switch - Passenger (AH8)

Pin	Wire Color	Circuit No.	Function
A	OG/PU	792	Passenger Power Seat Lumbar Motor Down Control
B	D-BU	211	Passenger Seat Lumbar Motor Forward Control
C	WH	210	Passenger Seat Lumbar Motor Rearward Control
D	-	-	Not Used
E	BK	350	Ground
F	PK	793	Passenger Power Seat Lumbar Motor Up Control
G	TN/D-BU	4240	Battery Positive Voltage

Memory Seat Module (MSM) C1 (A45)

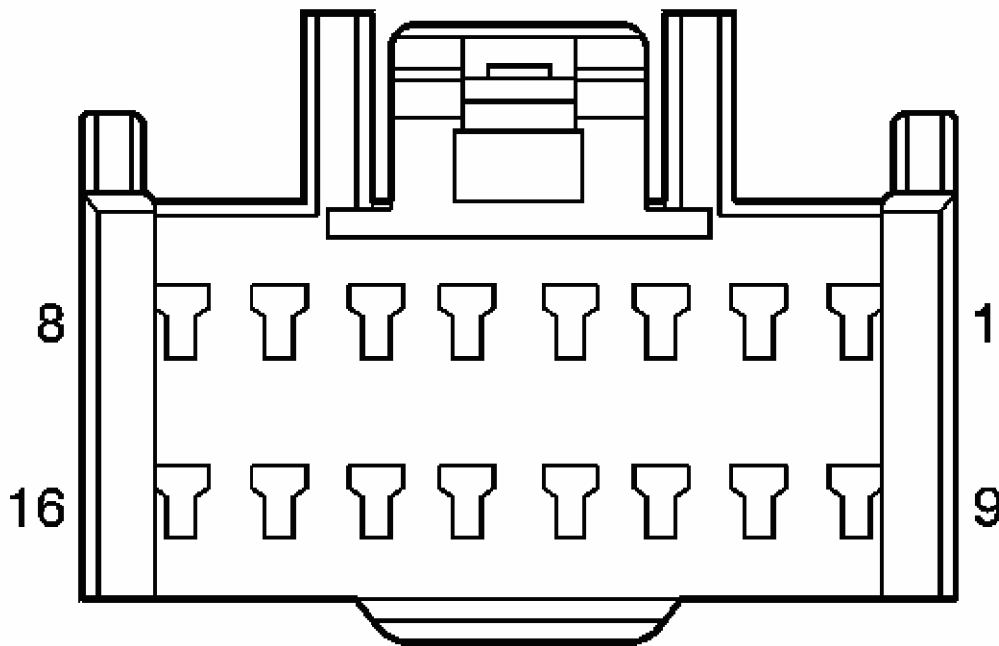


Fig. 26: Memory Seat Module (MSM) C1 (A45) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 6098-4611
- Service: 15134091
- Description: 16-Way F (BK)

Terminal Part Information

- Pins: 1, 4, 6, 9, 10, 11, 12, 13, 14, 15, 16
- Terminal/Tray: 8240-0128/22
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

Memory Seat Module (MSM) C1 (A45)

Pin	Wire Color	Circuit No.	Function
1	BK/WH	2432	Left Heated Seat Back Element Control (KA1)

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2-3	-	-	Not Used
4	PU	7023	Right Heated Seat Back Element Control (KA1)
5	-	-	Not Used
6	TN/PU	7024	Right Heated Seat Element Supply Voltage (KA1)
7-8	-	-	Not Used
9	TN	285	Driver Power Seat Horizontal Motor Forward Control
10	L-GN	284	Driver Power Seat Horizontal Motor Rearward Control
11	GY	2294	Left Heated Seat Cushion Element Control (KA1)
12	D-GN	286	Driver Power Seat Front Vertical Motor Up Control
13	D-BU	287	Driver Power Seat Front Vertical Motor Down Control
14	BN	2295	Left Heated Seat Element Supply Voltage (KA1)
15	YE	282	Driver Power Seat Rear Vertical Motor Up Control
16	L-BU	283	Driver Power Seat Rear Vertical Motor Down Control

Memory Seat Module (MSM) C2 (A45)

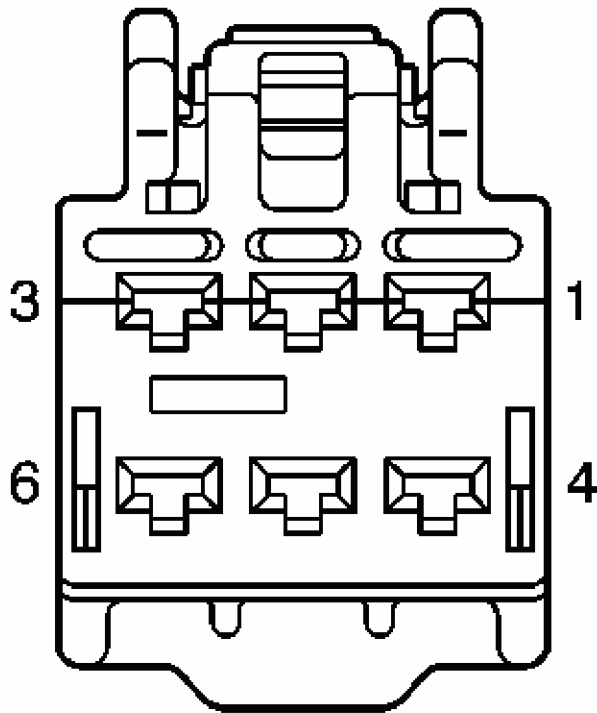


Fig. 27: Memory Seat Module (MSM) C2 (A45) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 6098-4607
- Service: See Catalog
- Description: 6-Way F (BK)

Terminal Part Information

- Pins: 1
- Terminal/Tray: 8100-4443/22
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 15315247/J-35616-35 (VT)
- Pins: 2, 3, 5, 6
- Terminal/Tray: See Terminal Repair Kit

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- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Memory Seat Module (MSM) C2 (A45)

Pin	Wire Color	Circuit No.	Function
1	TN/RD	782	Low Reference
2	PK	2426	Driver Heated Seat Back Temperature Sensor Low Reference (KA1)
3	YE	2080	Driver Heated Seat Cushion Temperature Sensor Low Reference (KA1)
4	-	-	Not Used
5	YE/WH	7021	Right Seat Back Temperature Sensor Low Reference (KA1)
6	OG/WH	7019	Right Seat Cushion Temperature Sensor Low Reference (KA1)

Memory Seat Module (MSM) C3 (A45)

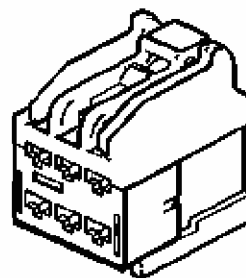
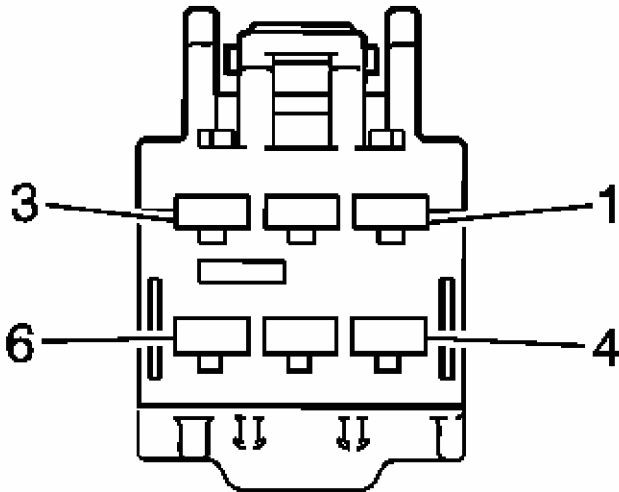


Fig. 28: Memory Seat Module (MSM) C3 (A45) Connector End View
Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 6098-4606
- Service: See Catalog
- Description: 6-Way F (BN)

Terminal Part Information

- Pins: 1, 4, 5
- Terminal/Tray: 8100-4445/22
- Core/Insulation Crimp: F/D
- Release Tool/Test Probe: 15315247/J-35616-35 (VT)
- Pins: 3, 6
- Terminal/Tray: 8100-4443/22
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 15315247/J-35616-35 (VT)

Memory Seat Module (MSM) C3 (A45)

Pin	Wire Color	Circuit No.	Function
1	BK	350	Ground
2	-	-	Not Used
3	GY/BK	5979	Memory Seat Switch High Reference
4	BK	350	Ground
5	RD/PK	1140	Battery Positive Voltage
6	OG/BN	1640	Battery Positive Voltage

Memory Seat Module (MSM) C4 (A45)

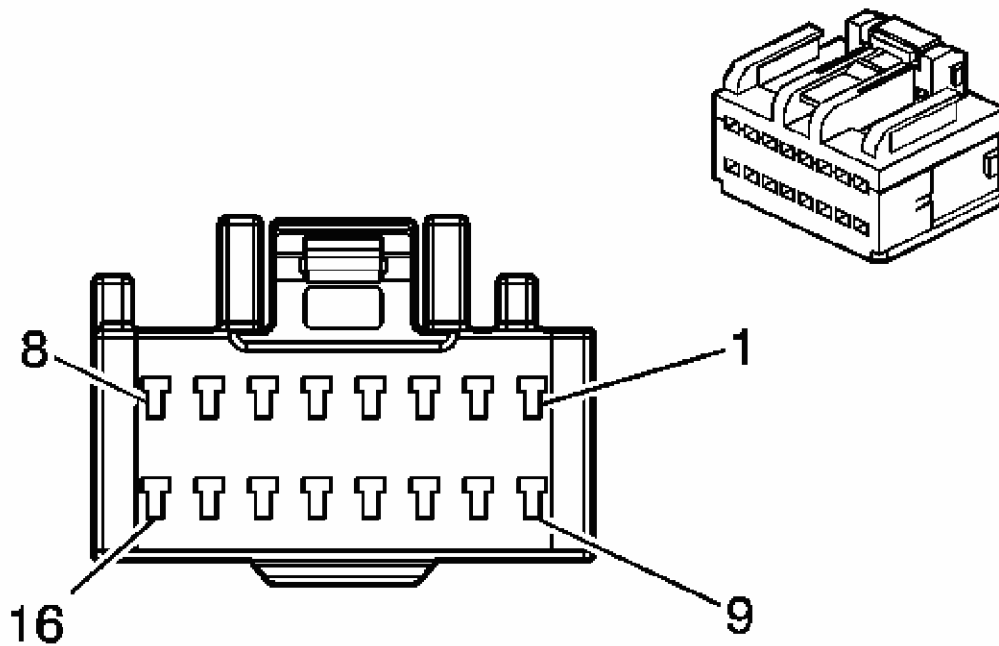


Fig. 29: Memory Seat Module (MSM) C4 (A45) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 6098-4610
- Service: See Catalog
- Description: 16-Way F (D-GN)

Terminal Part Information

- Pins: 1, 2, 12, 13, 14, 15, 16
- Terminal/Tray: 8240-0128/22
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

Memory Seat Module (MSM) C4 (A45)

Pin	Wire Color	Circuit No.	Function
1	PU	767	Driver Seat Lumbar Motor Down Control

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2	TN	768	Driver Power Seat Lumbar Motor Up Control
3-11	-	-	Not Used
12	D-BU	611	Driver Power Seat Lumbar Motor Forward Control
13	PK/PU	610	Driver Power Seat Lumbar Motor Rearward Control
14	PK	7022	Right Heated Seat Cushion Element Control (KA1)
15	YE	1257	Driver Power Seat Recline Motor Forward Control
16	L-BU	277	Driver Power Seat Recline Motor Rearward Control

Memory Seat Module (MSM) C5 (A45)

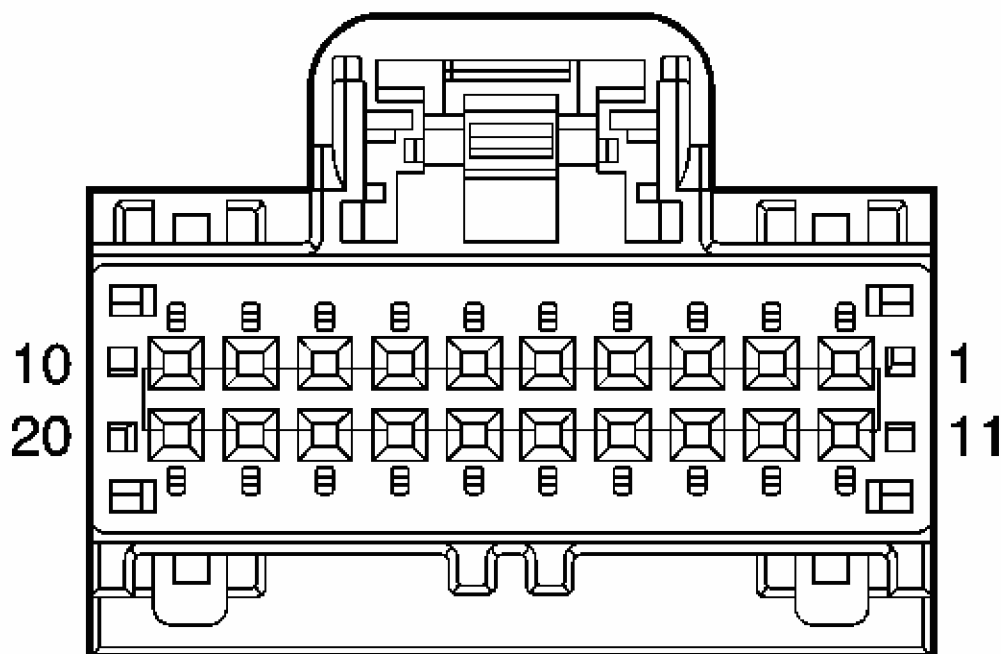


Fig. 30: Memory Seat Module (MSM) C5 (A45) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

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Connector Part Information

- OEM: 31410-1200
- Service: See Catalog
- Description: 20-Way F (BK)

Terminal Part Information

- Pins: 1, 2, 3, 4
- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit
- Pins: 11, 14, 15, 16, 17, 18, 19
- Terminal/Tray: 7116-4618-02/14
- Core/Insulation Crimp: P/P
- Release Tool/Test Probe: J-38125-215/J-35616-64B (L-BU)

Memory Seat Module (MSM) C5 (A45)

Pin	Wire Color	Circuit No.	Function
1	YE/BK	2079	Driver Heated Seat Cushion Temperature Sensor Signal (KA1)
2	OG/PK	7018	Right Seat Cushion Temperature Sensor Signal (KA1)
3	YE/BN	7020	Right Seat Back Temperature Sensor Signal (KA1)
4	D-BU	2425	Driver Heated Seat Back Temperature Sensor Signal (KA1)
5-10	-	-	Not Used
11	GY	788	5-Volt Reference
12-13	-	-	Not Used
14	BN/WH	557	Memory Seat Front Vertical Motor Position Sensor Signal
15	TN	568	Memory Seat Rear Vertical Motor Position Sensor Signal
16	D-GN	569	Memory Seat Horizontal Motor Position Sensor Signal
17	WH/BK	570	Driver Seat Recline Motor Position Sensor Signal
18	TN/WH	1062	Memory Seat Lumbar Vertical

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			Position Sensor Signal
19	YE	1063	Memory Seat Lumbar Horizontal Position Sensor Signal
20	-	-	Not Used

Memory Seat Module (MSM) C6 (A45)

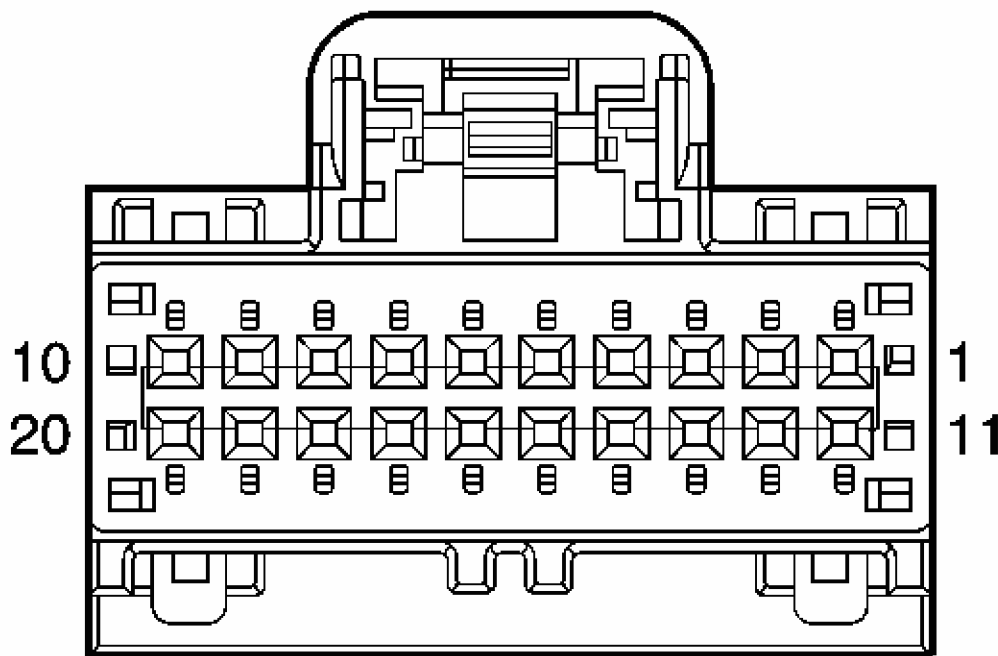


Fig. 31: Memory Seat Module (MSM) C6 (A45) Connector End View
Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 31410-1201
- Service: See Catalog
- Description: 20-Way F (GY)

Terminal Part Information

- Pins: 2, 5, 6, 11, 15, 16
- Terminal/Tray: 7116-4618-02/14

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- Core/Insulation Crimp: P/P
- Release Tool/Test Probe: J-38125-215/J-35616-64B (L-BU)

Memory Seat Module (MSM) C6 (A45)

Pin	Wire Color	Circuit No.	Function
1	-	-	Not Used
2	TN/L-BU	5961	Right Heated/Cooled Seat Mode Signal (KB6)
3-4	-	-	Not Used
5	WH	1066	Driver Seat Lumbar Up Switch Signal
6	YE	1065	Driver Seat Lumbar Forward Switch Signal
7-10	-	-	Not Used
11	L-GN/BK	181	Left Heated/Cooled Seat Mode Signal (KB6))
12-14	-	-	Not Used
15	YE/BK	1067	Driver Seat Lumbar Down Switch Signal
16	D-BU	1064	Driver Seat Lumbar Rearward Switch Signal
17-20	-	-	Not Used

Memory Seat Module (MSM) C7 (A45)

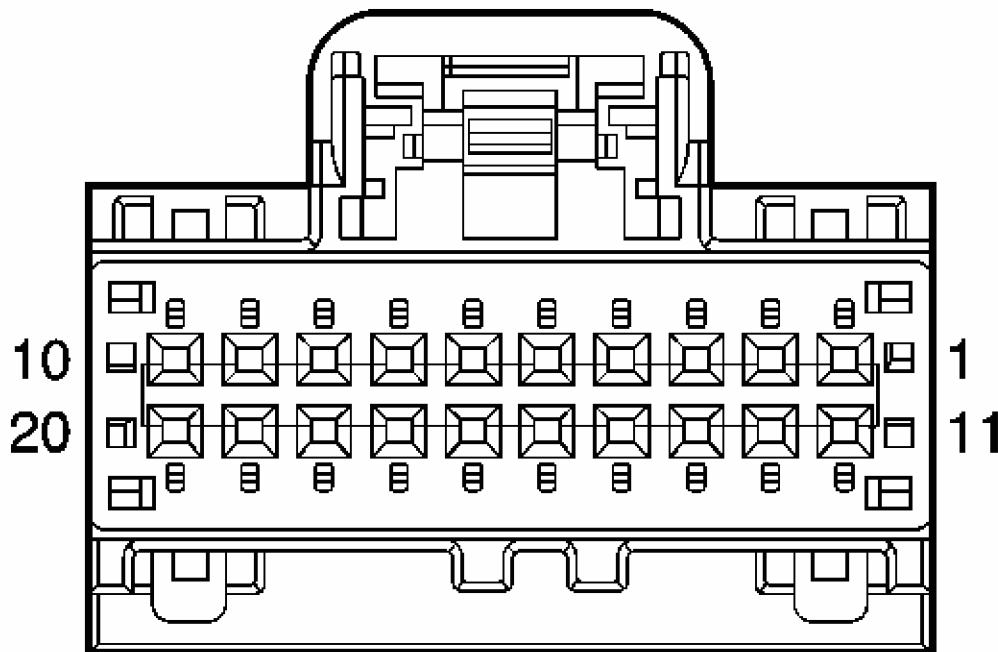


Fig. 32: Memory Seat Module (MSM) C7 (A45) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 31410-1202
- Service: See Catalog
- Description: 20-Way F (BN)

Terminal Part Information

- Pins: 7, 8, 9, 10, 16, 17, 18, 19, 20
- Terminal/Tray: 7116-4618-02/14
- Core/Insulation Crimp: P/P
- Release Tool/Test Probe: J-38125-215/J-35616-64B (L-BU)

Memory Seat Module (MSM) C7 (A45)

Pin	Wire Color	Circuit No.	Function
1-6	-	-	Not Used

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7	D-GN/WH	1518	Front Vertical Up Switch Signal
8	YE	1519	Rear Vertical Up Switch Signal
9	TN	1522	Horizontal Forward Switch Signal
10	L-GN/YE	276	Recline Motor Forward Switch Signal
11-15	-	-	Not Used
16	D-GN	5060	Low Speed GMLAN Serial Data
17	D-BU	1528	Front Vertical Down Switch Signal
18	L-BU/BK	1521	Rear Vertical Down Switch Signal
19	L-GN/BK	1523	Horizontal Rearward Switch Signal
20	L-BU/YE	277	Recline Motor Rearward Switch Signal

Seat Adjuster Motor Assembly - Driver (AE8, A45)

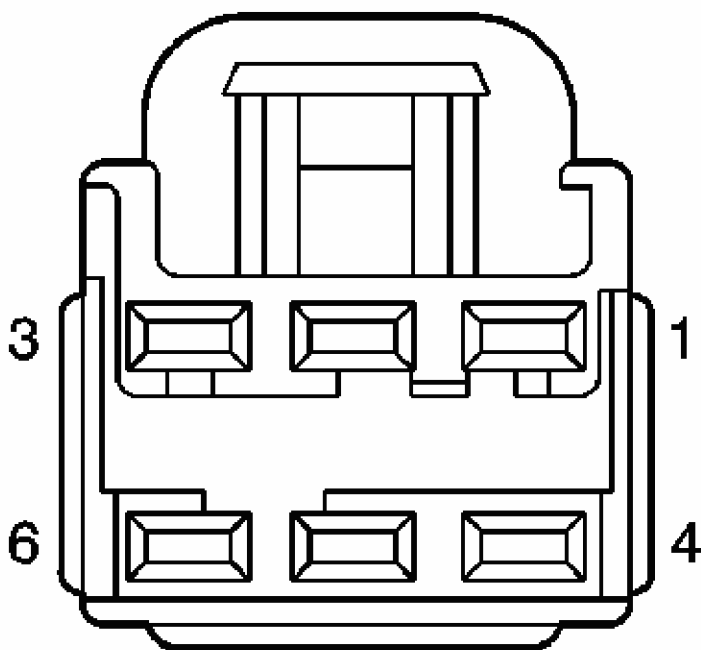


Fig. 33: Driver Seat Adjuster Motor Assembly (AE8, A45) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

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Connector Part Information

- OEM: 7283-6466-40
- Service: See Catalog
- Description: 6-Way F YESC 2.8MM (BK)

Terminal Part Information

- Terminal/Tray: 7116-4112-02/9
- Core/Insulation Crimp: C/D
- Release Tool/Test Probe: 12094430/J-35616-35 (VT)

Seat Adjuster Motor Assembly - Driver (AE8, A45)

Pin	Wire Color	Circuit No.	Function
1	YE	282	Driver Seat Rear Vertical Motor Up Control
2	D-GN	286	Driver Seat Front Vertical Motor Up Control
3	TN	285	Driver Seat Horizontal Motor Forward Control
4	L-BU	283	Driver Seat Rear Vertical Motor Down Control
5	D-BU	287	Driver Seat Front Vertical Motor Down Control
6	L-GN	284	Driver Seat Horizontal Motor Rearward Control

Seat Adjuster Motor Assembly - Driver C1 (A45)

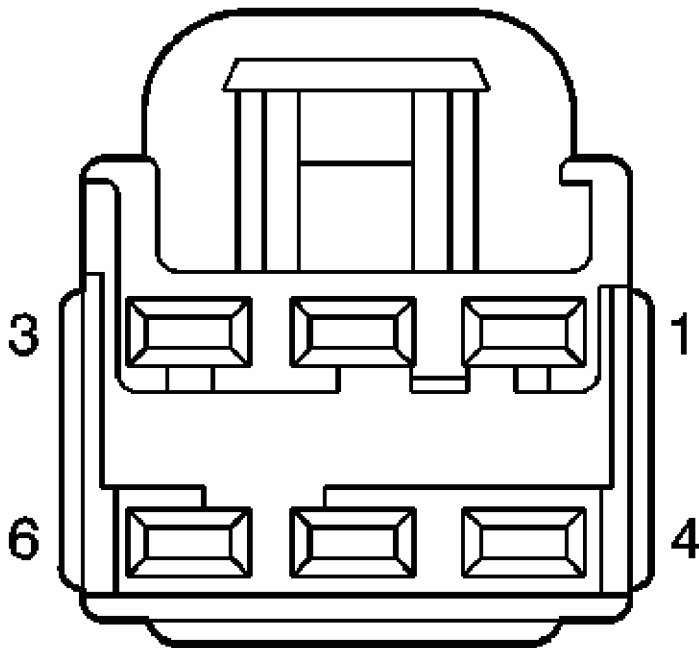


Fig. 34: Driver Seat Adjuster Motor Assembly C1 (A45) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 7283-6466-40
- Service: See Catalog
- Description: 6-Way F YESC 2.8MM (BK)

Terminal Part Information

- Pins: 1, 2, 4, 5, 6
- Terminal/Tray: 7116-4111-02/9
- Core/Insulation Crimp: C/A
- Release Tool/Test Probe: 12094430/J-35616-4A (PU)
- Pins: 3
- Terminal/Tray: 7116-4112-02/9
- Core/Insulation Crimp: C/D

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- Release Tool/Test Probe: 12094430/J-35616-35 (VT)

Seat Adjuster Motor Assembly - Driver C1 (A45)

Pin	Wire Color	Circuit No.	Function
1	YE	282	Driver Power Seat Rear Vertical Motor Up Control
2	D-GN	286	Driver Power Seat Front Vertical Motor Up Control
3	TN	285	Driver Power Seat Horizontal Motor Forward Control
4	L-BU	283	Driver Power Seat Rear Vertical Motor Down Control
5	D-BU	287	Driver Power Seat Front Vertical Motor Down Control
6	L-GN	284	Driver Power Seat Horizontal Motor Rearward Control

Seat Adjuster Motor Assembly - Driver C2 (A45)

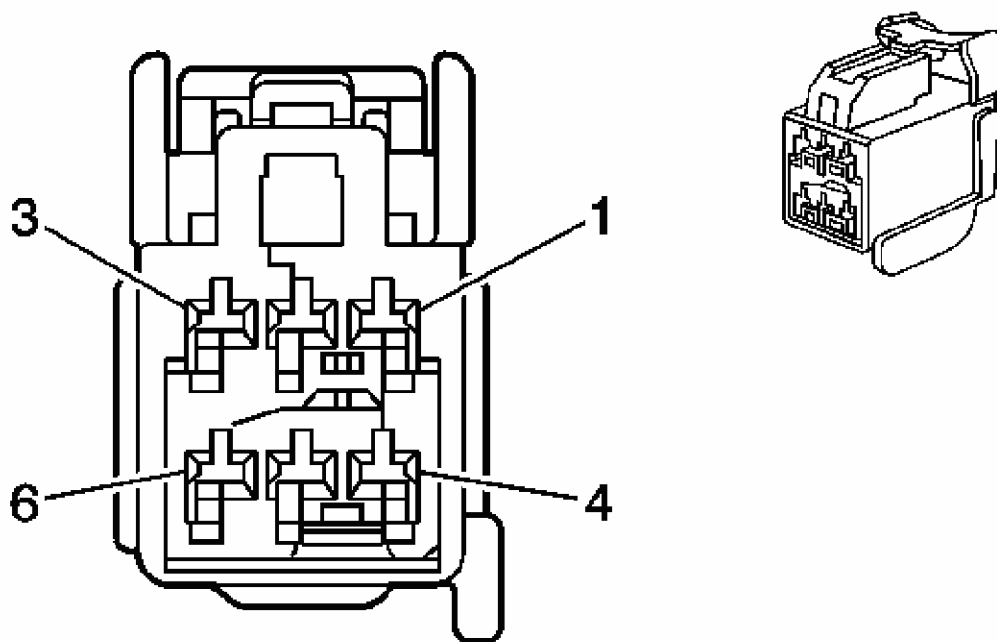


Fig. 35: Driver Seat Adjuster Motor Assembly C2 (A45) Connector End View

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Power Seat Connector End Views

Connector Part Information

- OEM: 7283-5532-40
- Service: 89046849
- Description: 6-Way F 1.5 Series (GY)

Terminal Part Information

- Pins: 1, 2, 3, 5, 6
- Terminal/Tray: 7116-4100-08/9
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094430/J-35616-2A (GY)

Seat Adjuster Motor Assembly - Driver C2 (A45)

Pin	Wire Color	Circuit No.	Function
1	BN/WH	557	Memory Seat Front Vertical Motor Position Sensor Signal
2	TN/RD	782	Low Reference
3	D-GN	569	Memory Seat Horizontal Motor Position Sensor Signal
4	-	-	Not Used
5	TN	568	Memory Seat Rear Vertical Motor Position Sensor Signal
6	GY	788	5-Volt Reference

Seat Adjuster Motor Assembly - Front Passenger (AG2/AH8)

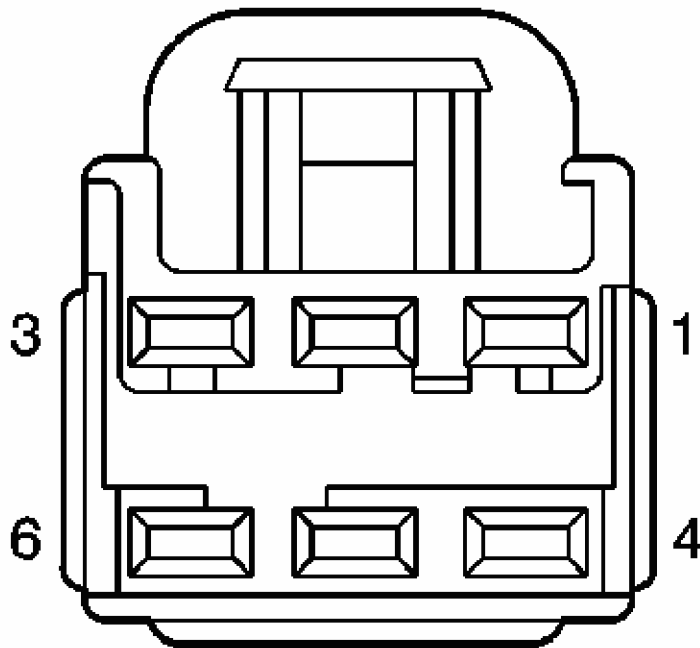


Fig. 36: Passenger Front Seat Adjuster Motor Assembly (AG2/AH8) Connector End View

Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 7283-6466-40
- Service: See Catalog
- Description: 6-Way F YESC 2.8MM (BK)

Terminal Part Information

- Terminal/Tray: 7116-4112-02/9
- Core/Insulation Crimp: C/D
- Release Tool/Test Probe: 12094430/J-35616-35 (VT)

Seat Adjuster Motor Assembly - Front Passenger (AG2/AH8)

Pin	Wire Color	Circuit No.	Function
1	YE	288	Passenger Seat Rear Vertical Motor

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			Up Control
2	D-GN	297	Passenger Seat Front Vertical Motor Up Control
3	TN	296	Passenger Seat Horizontal Motor Forward Control
4	L-BU	289	Passenger Seat Rear Vertical Motor Down Control
5	D-BU	298	Passenger Seat Front Vertical Motor Down Control
6	L-GN	290	Passenger Seat Horizontal Motor Rearward Control

Seat Adjuster Switch - Driver (A45)

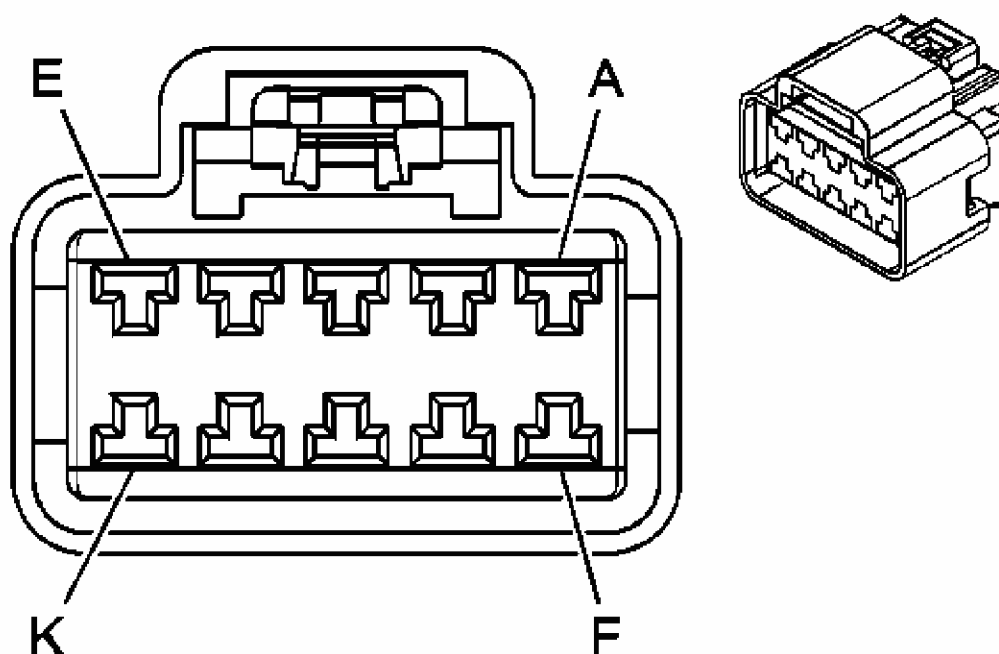


Fig. 37: Driver Seat Adjuster Switch (A45) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 15326931

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- Service: 15306309
- Description: 10-Way F GT 280 Series (BK)

Terminal Part Information

- Pins: A, C, D, E, F, G, H, J, K
- Terminal/Tray: 15304711/8
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Seat Adjuster Switch - Driver (A45)

Pin	Wire Color	Circuit No.	Function
A	D-GN/WH	1518	Front Vertical Up Switch Signal
B	-	-	Not Used
C	L-GN/BK	1523	Horizontal Rearward Switch Signal
D	TN	1522	Horizontal Forward Switch Signal
E	GY/BK	5979	Memory Seat Switch High Reference
F	YE	1519	Rear Vertical Up Switch Signal
G	L-BU/YE	277	Recline Motor Rearward Switch Signal
H	L-GN/YE	276	Recline Motor Forward Switch Signal
J	L-BU/BK	1521	Rear Vertical Down Switch Signal
K	D-BU	1528	Front Vertical Down Switch Signal

Seat Adjuster Switch - Driver (AE8)

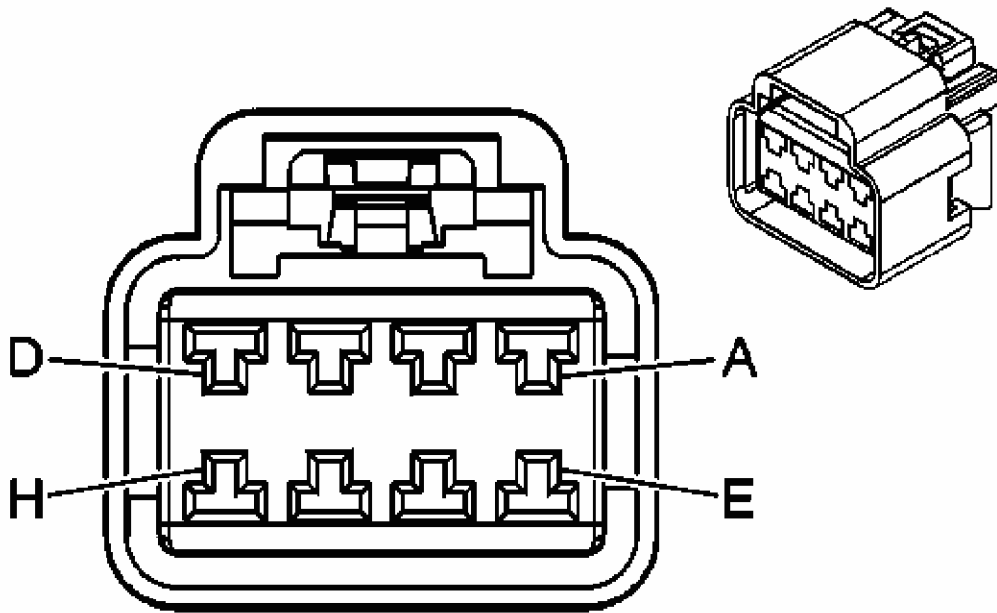


Fig. 38: Driver Seat Adjuster Window Switch (AE8) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 15326924
- Service: 15306174
- Description: 8-Way F GT 280 (BK)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Seat Adjuster Switch - Driver (AE8)

Pin	Wire Color	Circuit No.	Function
A	D-GN	286	Driver Seat Front Vertical Motor Up Control
B	BK	350	Ground
			Driver Seat Horizontal Motor

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C	TN	285	Forward Control
D	RD/PK	1140	Battery Positive Voltage
E	YE	282	Driver Seat Rear Vertical Motor Up Control
F	L-GN	284	Driver Seat Horizontal Motor Rearward Control
G	L-BU	283	Driver Seat Rear Vertical Motor Down Control
H	D-BU	287	Driver Seat Front Vertical Motor Down Control

Seat Adjuster Switch - Passenger (AG2)

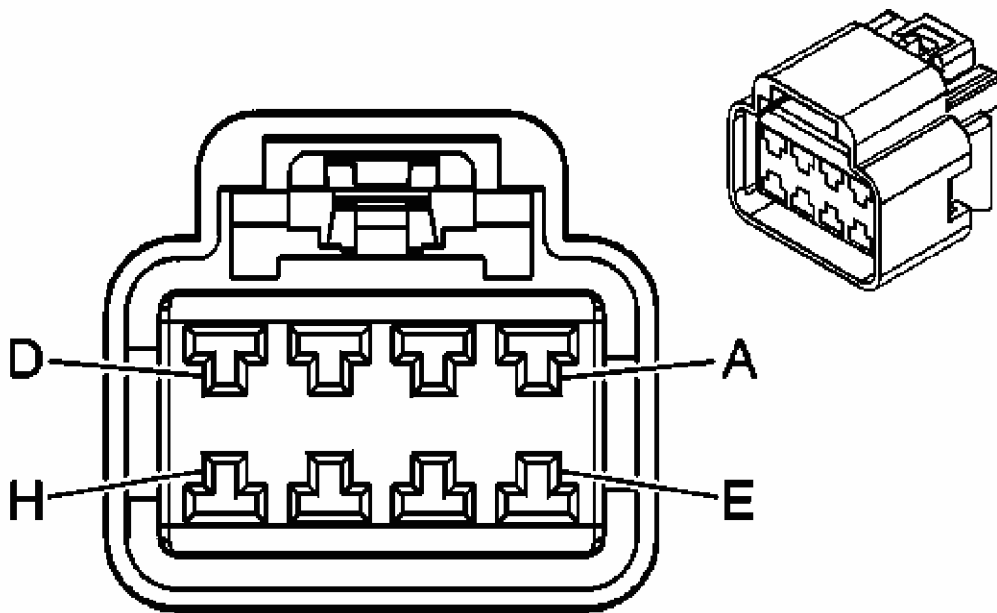


Fig. 39: Passenger Seat Adjuster Switch (AG2) Connector End View
Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 15326924
- Service: 15306174

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- Description: 8-Way F GT 280 Series (BK)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Seat Adjuster Switch - Passenger (AG2)

Pin	Wire Color	Circuit No.	Function
A	D-BU	298	Passenger Seat Front Vertical Motor Down Control
B	BK	350	Ground
C	TN	296	Passenger Seat Horizontal Motor Forward Control
D	TN/D-BU	4240	Battery Positive Voltage
E	L-BU	289	Passenger Seat Rear Vertical Motor Down Control
F	L-GN	290	Passenger Seat Horizontal Motor Rearward Control
G	YE	288	Passenger Seat Rear Vertical Motor Up Control
H	D-GN	297	Passenger Seat Front Vertical Motor Up Control

Seat Adjuster Switch - Passenger (AH8)

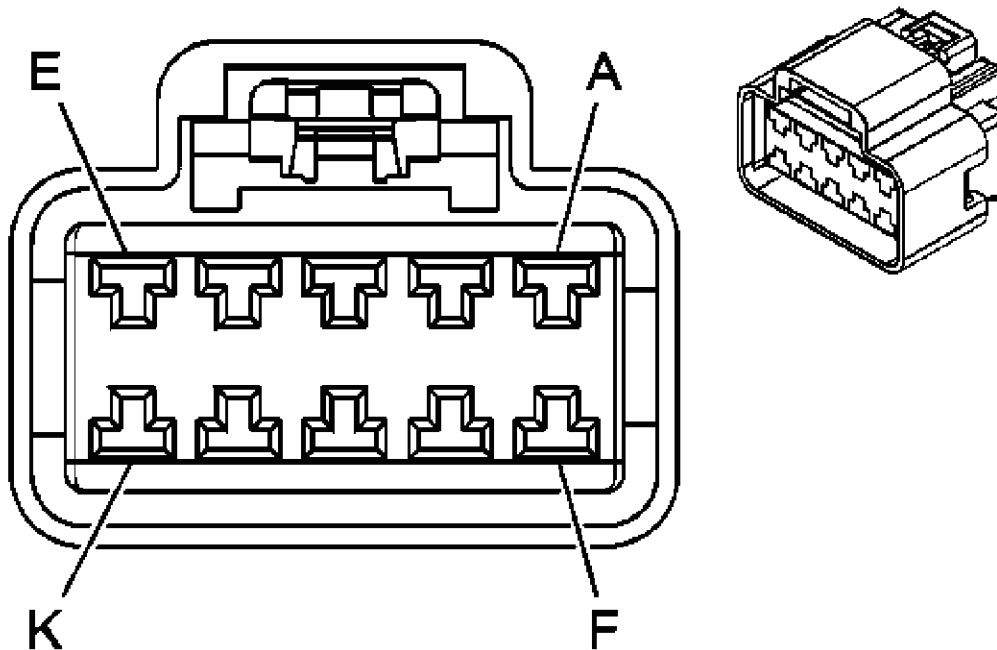


Fig. 40: Passenger Seat Adjuster Switch (AH8) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 15326931
- Service: 15306309
- Description: 10-Way F GT 280 Series (BK)

Terminal Part Information

- Terminal/Tray: 15304713/19
- Core/Insulation Crimp: 4/4
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Seat Adjuster Switch - Passenger (AH8)

Pin	Wire Color	Circuit No.	Function
A	D-BU	298	Passenger Seat Front Vertical Motor Down Control
B	BK	350	Ground

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C	L-GN	290	Passenger Seat Horizontal Motor Rearward Control
D	TN	296	Passenger Seat Horizontal Motor Forward Control
E	TN/D-BU	4240	Battery Positive Voltage
F	L-BU	289	Passenger Seat Rear Vertical Motor Down Control
G	D-BU/RD	77	Passenger Seat Recline Motor Rearward
H	D-GN/PK	76	Passenger Seat Recline Motor Forward
J	YE	288	Passenger Seat Rear Vertical Motor Up Control
K	D-GN	297	Passenger Seat Front Vertical Motor Up Control

Seat Back Ventilation Heat & Cool Module - Driver (KB6)

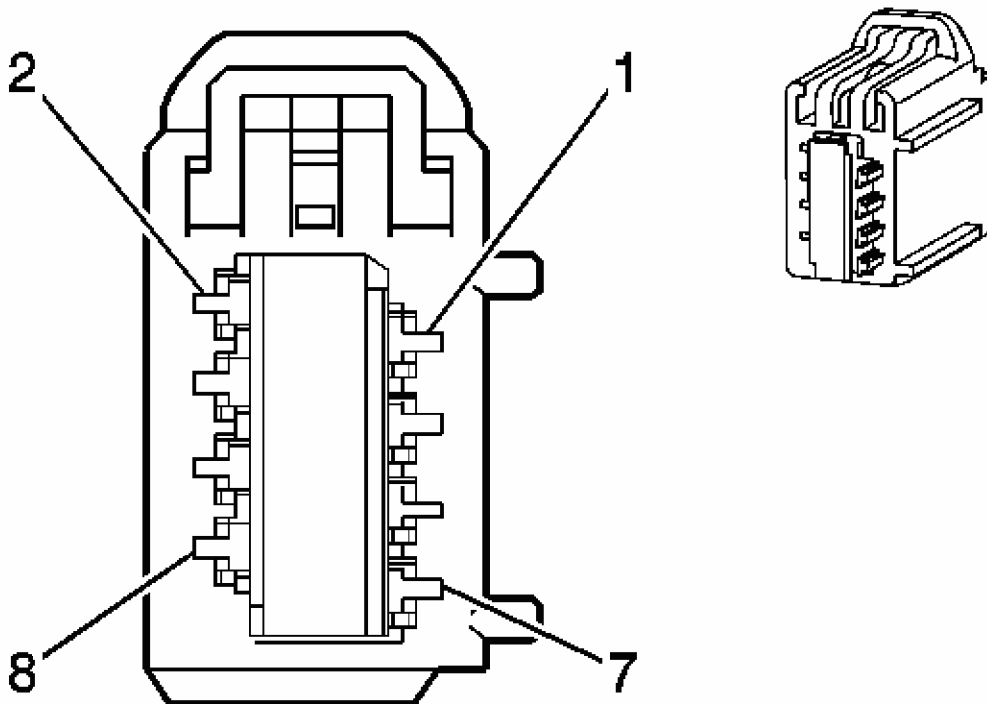


Fig. 41: Driver Seat Back Ventilation Heat & Cool Module (KB6) Connector End View

Courtesy of **GENERAL MOTORS CORP.**

Power Seat Connector End Views

Connector Part Information

- OEM: E3575-001
- Service: See Catalog
- Description: 8-Way F 1.5mm Unsealed (BK)

Terminal Part Information

- Pins: 1, 3
- Terminal/Tray: 7116-4101-08/9
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 12094430/J-35616-2A (GY)
- Pins: 2, 4, 5, 7, 8
- Terminal/Tray: 7116-4100-08/9
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094430/J-35616-2A (GY)

Seat Back Ventilation Heat & Cool Module - Driver (KB6)

Pin	Wire Color	Circuit No.	Function
1	PU	7023	Driver Seat Back Heated/Cool Ventilation Module Heat Control
2	D-BU	6143	Driver Seat Blower Supply Voltage
3	TN/PU	7024	Driver Seat Back Heated/Cool Ventilation Module Cool Control
4	D-GN	6238	Driver Seat Blower Low Reference
5	YE/BN	7020	Driver Seat Back Temperature Sensor Signal
6	-	-	Not Used
7	GY/PU	6211	Driver Seat Back Blower Speed Control
8	YE/WH	7021	Driver Seat Back Temperature Sensor Low Reference

Seat Back Ventilation Heat & Cool Module - Front Passenger (KB6)

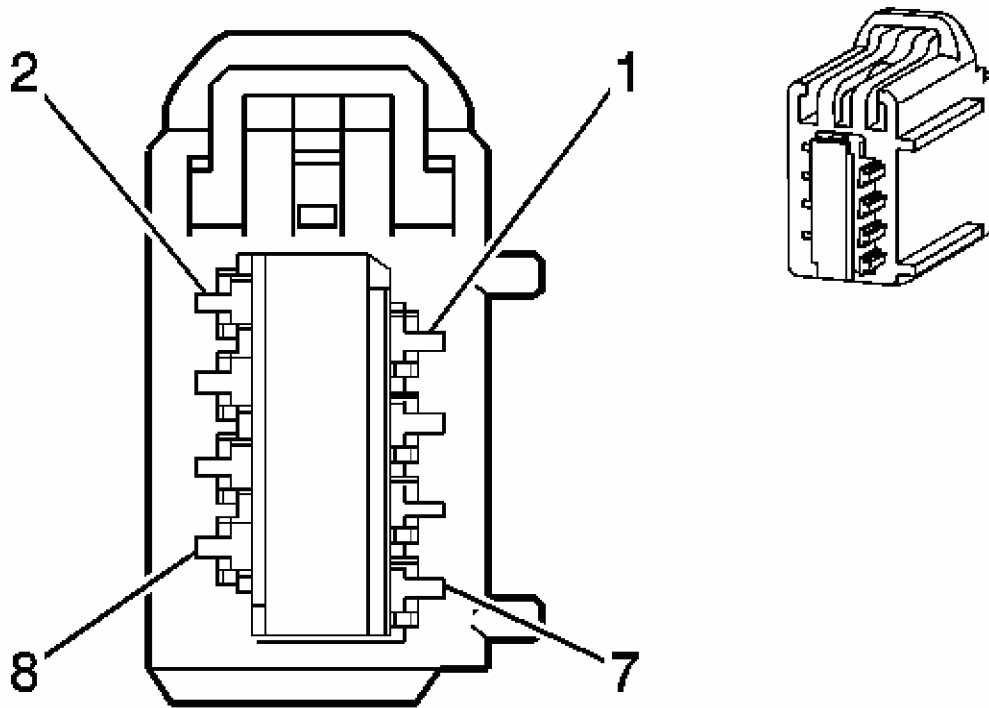


Fig. 42: Passenger Front Seat Back Ventilation Heat & Cool Module (KB6) Connector End View

Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: E3575-001
- Service: See Catalog
- Description: 8-Way F 1.5mm Unsealed (BK)

Terminal Part Information

- Pins: 1, 3
- Terminal/Tray: 7116-4101-08/9
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 12094430/J-35616-2A (GY)
- Pins: 2, 4, 5, 7, 8

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- Terminal/Tray: 7116-4100-08/9
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094430/J-35616-2A (GY)

Seat Back Ventilation Heat & Cool Module - Front Passenger (KB6)

Pin	Wire Color	Circuit No.	Function
1	L-BU	6225	Passenger Seat Back Heated/Cool Ventilation Module Heat Control
2	D-BU/WH	6222	Passenger Seat Blower Voltage Reference
3	TN/OG	6226	Passenger Seat Back Heated/Cool Ventilation Module Cool Control
4	TN/PK	6446	Passenger Seat Blower Low Reference
5	TN	2436	Passenger Seat Back Temperature Sensor Signal
6	-	-	Not Used
7	BN	6223	Passenger Seat Blower Speed Control
8	TN/GY	2482	Passenger Seat Back Temperature Low Reference

Seat Cushion Ventilation Heat & Cool Module - Driver (KB6)

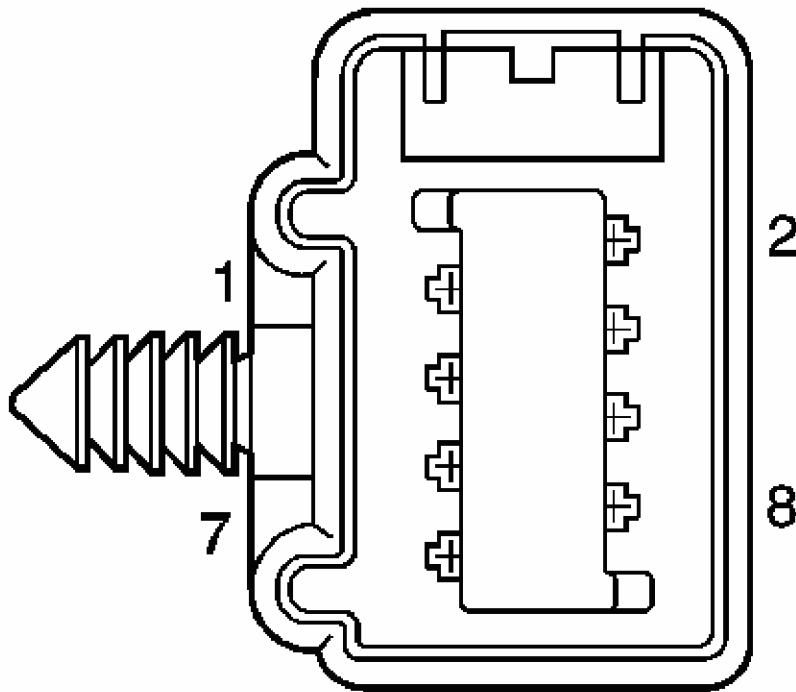


Fig. 43: Driver Seat Cushion Ventilation Heat & Cool Module (KB6) Connector End View

Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: E3578-003
- Service: See Catalog
- Description: 8-Way M (BK)

Terminal Part Information

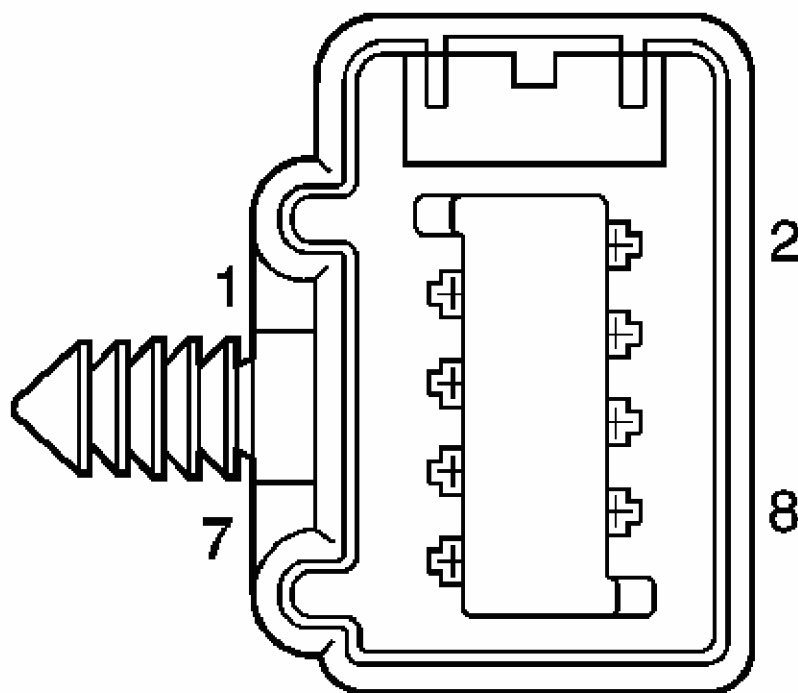
- Pins: 1, 2, 3, 4, 5, 7, 8
- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Seat Cushion Ventilation Heat & Cool Module - Driver (KB6)

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Pin	Wire Color	Circuit No.	Function
1	PK	7022	Driver Seat Cushion Heated/Cooled Ventilation Module Heat Control
2	D-BU	6143	Driver Seat Blower Supply Voltage
3	L-GN	6216	Driver Seat Cushion Heated/Cool Ventilation Module Cool Control
4	D-GN	6238	Driver Seat Blower Low Reference
5	OG/PK	7018	Driver Seat Cushion Temperature Sensor Signal
6	-	-	Not Used
7	BK/TN	6218	Driver Seat Cushion Blower Speed Control
8	OG/WH	7019	Driver Seat Cushion Temperature Sensor Low Reference

Seat Cushion Ventilation Heat & Cool Module - Front Passenger (KB6)**Fig. 44: Front Passenger Seat Cushion Ventilation Heat & Cool Module (KB6)
Connector End View**

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2006 ACCESSORIES & EQUIPMENT Seats - Lucerne

Courtesy of **GENERAL MOTORS CORP.**

Power Seat Connector End Views

Connector Part Information

- OEM: E3578-003
- Service: See Catalog
- Description: 8-Way M (BK)

Terminal Part Information

- Pins: 1, 2, 3, 4, 5, 7, 8
- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Seat Cushion Ventilation Heat & Cool Module - Front Passenger (KB6)

Pin	Wire Color	Circuit No.	Function
1	L-GN/WH	6227	Passenger Seat Cushion Heated/Cool Ventilation Module Heat Control
2	D-BU/WH	6222	Passenger Seat Blower Voltage Reference
3	L-GN/OG	6228	Passenger Seat Cushion Heated/Cool Ventilation Module Cool Control
4	TN/PK	6446	Passenger Seat Blower Low Reference
5	GY	2434	Passenger Seat Cushion Temperature Sensor Signal
6	-	-	Not Used
7	PU	6229	Passenger Seat Cushion Blower Speed Control
8	PK	2435	Passenger Seat Cushion Temperature Low Reference

Seat Lumbar Massage Motor - Driver C1 (A45)

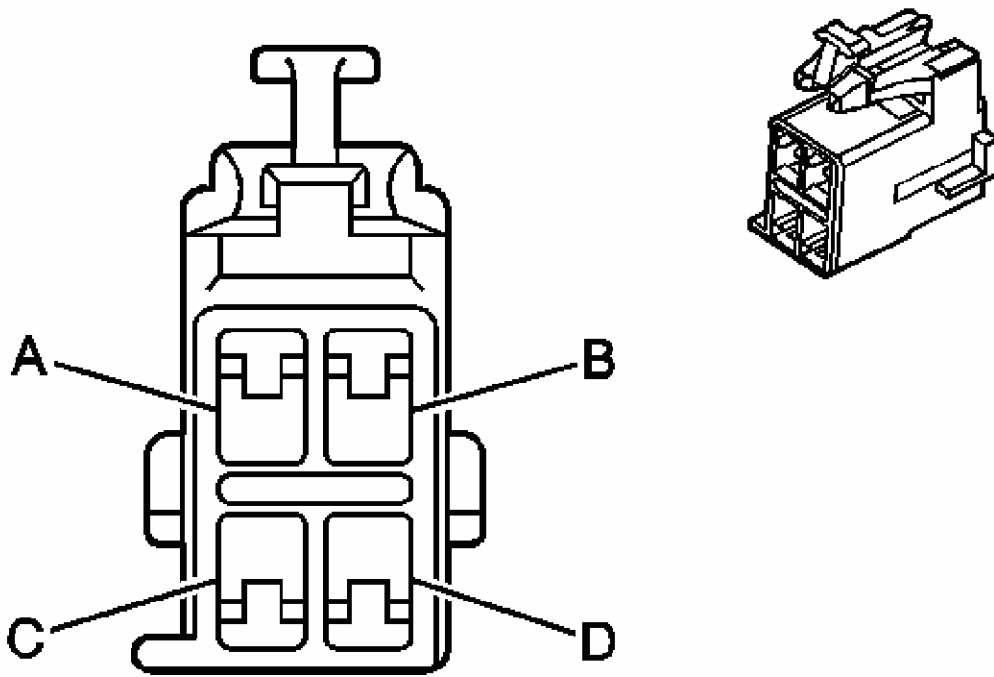


Fig. 45: Driver Seat Lumbar Massage Motor C1 (A45) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 12129136
- Service: 12129136
- Description: 4-Way F Metri-Pack 280 Series, Flexlock (BK)

Terminal Part Information

- Pins: A
- Terminal/Tray: 12110842/4
- Core/Insulation Crimp: A/B
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)
- Pins: B, C, D
- Terminal/Tray: 12110844/4
- Core/Insulation Crimp: C/A

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- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Seat Lumbar Massage Motor - Driver C1 (A45)

Pin	Wire Color	Circuit No.	Function
A	TN	768	Driver Power Seat Lumbar Motor Up Control
B	PU	767	Driver Power Seat Lumbar Motor Down Control
C	PK/PU	610	Driver Power Seat Lumbar Motor Rearward Control
D	D-BU	611	Driver Power Seat Lumbar Motor Forward Control

Seat Lumbar Massage Motor - Driver C2 (A45)

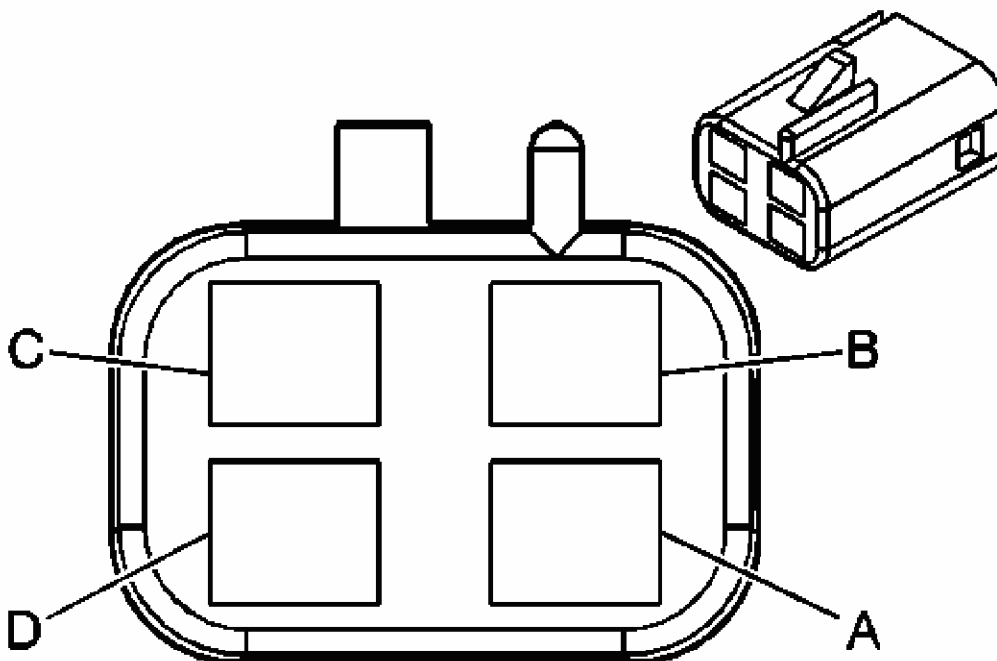


Fig. 46: Driver Seat Lumbar Massage Motor C2 (A45) Connectors End Views
Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

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- OEM: 12047785
- Service: 12102900
- Description: 4-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-2A (GY)

Seat Lumbar Massage Motor - Driver C2 (A45)

Pin	Wire Color	Circuit No.	Function
A	TN/RD	782	Low Reference
B	TN/WH	1062	Memory Seat Lumbar Vertical Position Sensor Signal
C	GY	788	5-Volt Reference
D	YE	1063	Memory Seat Lumbar Horizontal Position Sensor Signal

Seat Lumbar Motor - Front Passenger (AH8)

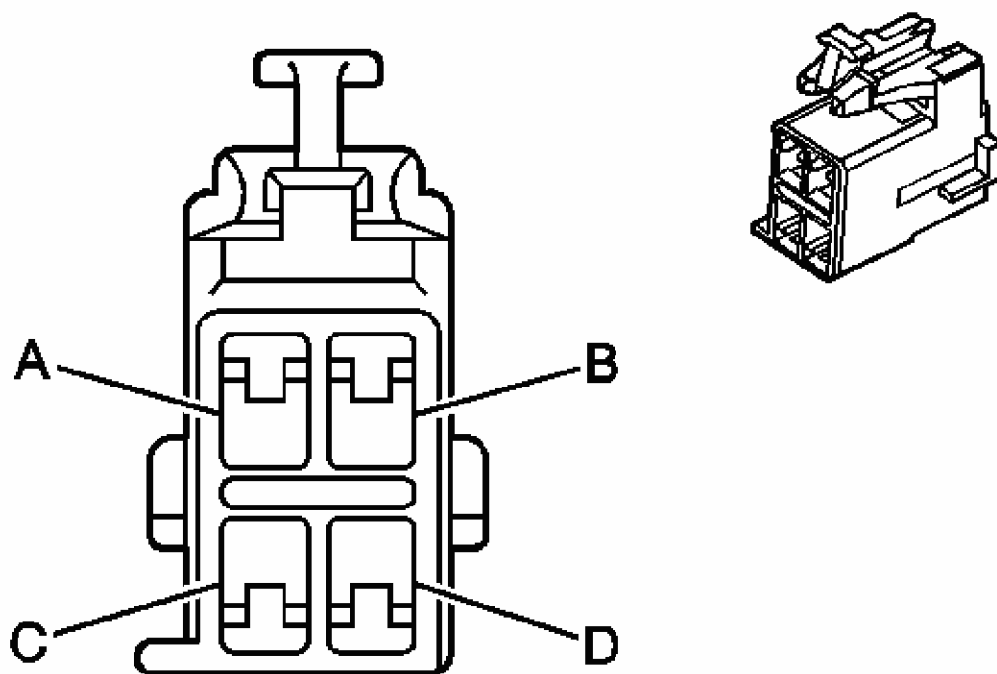


Fig. 47: Passenger Seat Lumbar Massage Motor (AH8) Connectors End Views
 Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 12129136
- Service: 12129136
- Description: 4-Way F Metri-Pack 280 Series, Flexlock (BK)

Terminal Part Information

- Terminal/Tray: 12110842/4
- Core/Insulation Crimp: A/B
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Seat Lumbar Motor - Front Passenger (AH8)

Pin	Wire Color	Circuit No.	Function
A	PK	793	Passenger Seat Lumbar Motor Up Control

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B	OG/PU	792	Passenger Seat Lumbar Motor Down Control
C	WH	210	Passenger Seat Lumbar Motor Rearward Control
D	D-BU	211	Passenger Seat Lumbar Motor Forward Control

Seat Recline Motor - Driver C1 (AE8, A45)

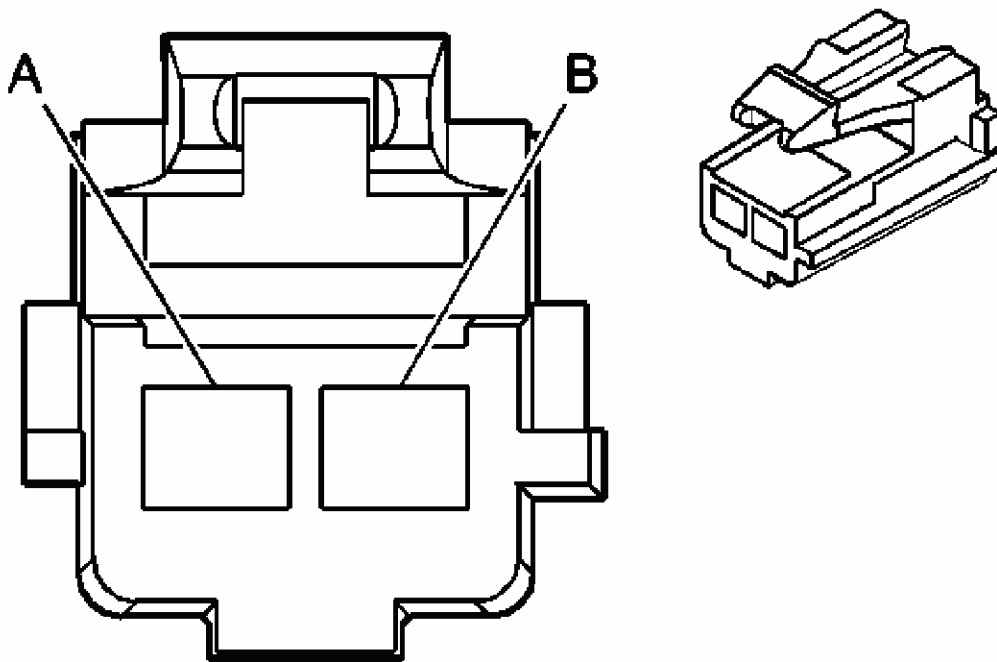


Fig. 48: Driver Seat Recline Motor C1 (AE8, A45) Connector End View
Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 12129081
- Service: 12129081
- Description: 2-Way F Metri-Pack 280 Series, Flexlock (BK)

Terminal Part Information

- Terminal/Tray: 12110842/4

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- Core/Insulation Crimp: A/B
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Seat Recline Motor - Driver C1 (AE8, A45)

Pin	Wire Color	Circuit No.	Function
A	YE	1257	Driver Power Seat Recline Motor Forward Control
B	L-BU	277	Driver Power Seat Recline Motor Rearward Control

Seat Recline Motor - Driver C2 (AE8, A45)

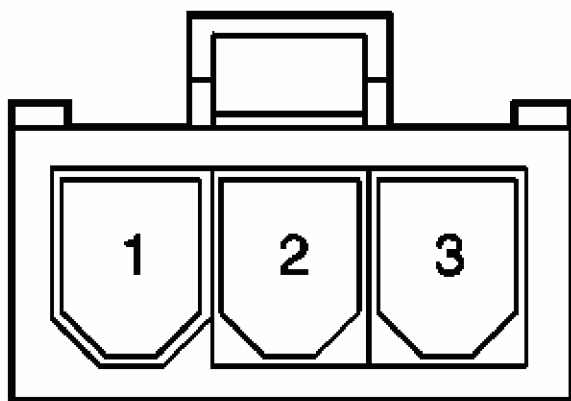


Fig. 49: Driver Seat Recline Motor C2 (AE8, A45) Connector End View
Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 39-01-4030
- Service: See Catalog
- Description: 3-Way F Molex Connector (NA)

Terminal Part Information

- Terminal/Tray: 39-00-0038/23
- Core/Insulation Crimp: K/K

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- Release Tool/Test Probe: J-38125-560/J-35616-12 (BU)

Seat Recline Motor - Driver C2 (AE8, A45)

Pin	Wire Color	Circuit No.	Function
1	GY	788	Memory Position Sensor 5-Volt Reference
2	WH/BK	570	Memory Seat Recline Motor Position Sensor Signal
3	TN/RD	782	Memory Seat Sensor Low Reference

Seat Recline Motor - Front Passenger (AH8)

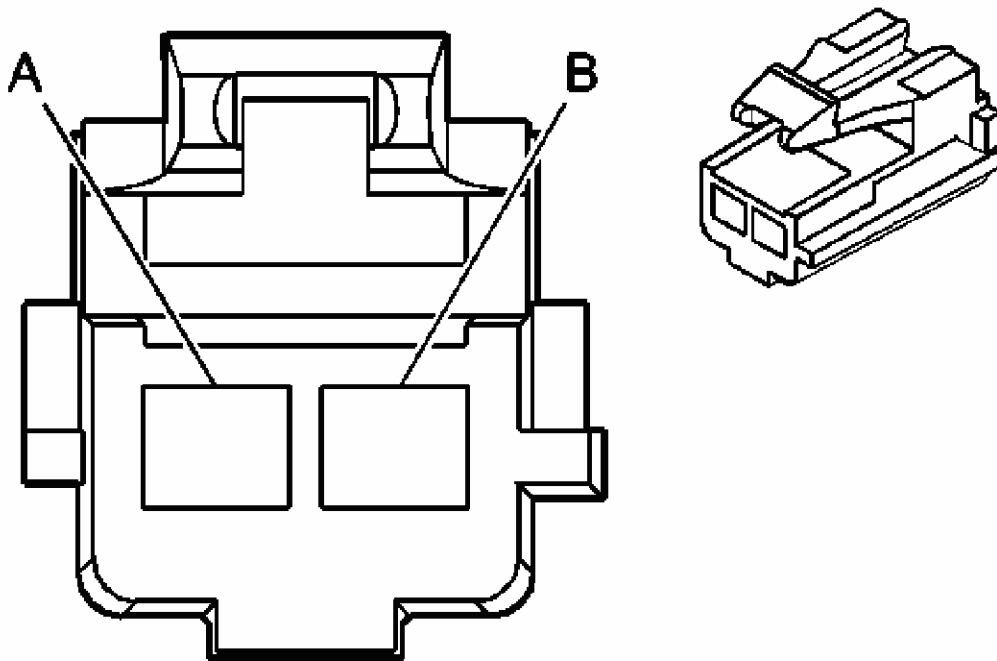


Fig. 50: Front Passenger Seat Recline Motor (AH8) Connector End View
Courtesy of GENERAL MOTORS CORP.

Power Seat Connector End Views

Connector Part Information

- OEM: 12129081
- Service: 12129081

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- Description: 2-Way F Metri-Pack 280 Series, Flexlock (BK)

Terminal Part Information

- Terminal/Tray: 12110842/4
- Core/Insulation Crimp: A/B
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Seat Recline Motor - Front Passenger (AH8)

Pin	Wire Color	Circuit No.	Function
A	D-GN/PK	76	Passenger Seat Recline Motor Forward
B	D-BU/RD	77	Passenger Seat Recline Motor Rearward

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
<u>DTC B1335</u>	** DESCRIPTION NOT COLLECTED **
<u>DTC B1395</u>	**DESCRIPTION NOT COLLECTED **
<u>DTC B1735, B1740, B1745, B1750, B1755, B1760, B1815 or B1820</u>	** MULTIPLE VALUES **
<u>DTC B1825, B1850, B1860, B2355, B2365 or B2375</u>	** MULTIPLE VALUES **
<u>DTC B1925 or B2170</u>	** MULTIPLE VALUES **
<u>DTC B1935 or B2180</u>	** MULTIPLE VALUES **
<u>DTC B2345</u>	**DESCRIPTION NOT COLLECTED **
<u>DTC B2425 or B2430</u>	** MULTIPLE VALUES **
<u>DTC B2435 or B2440</u>	** MULTIPLE VALUES **
<u>DTC B2508 or B2509</u>	** MULTIPLE VALUES **
<u>DTC B3920 or B3921</u>	** MULTIPLE VALUES **

DIAGNOSTIC STARTING POINT - SEATS

Begin memory and heated seat system diagnosis with **Diagnostic System Check - Vehicle** .

The Diagnostic System Check will provide the following information.

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- Identification of the control modules that command the system.
- The ability of the control modules to communicate with a serial data circuit.
- Identification of stored diagnostic trouble codes and their status.

The use of the Diagnostic System Check will identify the correct the correct procedure for diagnosing the system and where the procedure is located.

SCAN TOOL OUTPUT CONTROLS

Memory Seat Module (MSM)

Scan Tool Output Control	Additional Menu Selection(s)	Description
Front Up/Down	Seats/Special Functions/Memory Seat Module/Driver Seat	The MSM activates the seat front vertical motor when you select Up or Down. The motor should tilt the front of the seat in the up or down direction until the it reaches it's end of travel.
Lumbar Forward/Rearward	Seats/Special Functions/Memory Seat Module/Driver Seat	The MSM activates the lumbar horizontal motor when you select Forward or Rearward. The motor should move the lumbar in the forward or rearward direction until the it reaches it's end of travel.
Lumbar Up/Down	Seats/Special Functions/Memory Seat Module/Driver Seat	The MSM activates the driver seat lumbar vertical motor when you select Up or Down. The motor should move the lumbar in the up and down directions until the scan tool EXIT button is pressed.
Memory 1 Recall	Seats/Special Functions/Memory Seat Module/Driver Seat	The MSM activates the previously programmed seat directional motors when you select On. The motors should move the seat to the memory position for driver 1 or until you select Off.
Memory 2 Recall	Seats/Special Functions/Memory Seat Module/Driver Seat	The MSM activates the previously programmed seat directional motors when you select On. The motors should move the seat to the memory position for driver 2 or until you select Off.
Memory Exit 1 Recall	Seats/Special Functions/Driver Position Module/Driver Seat	The MSM activates the previously programmed seat directional motors when you select On. The motors should move the seat to the exit position for driver 1 or until you select Off.

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Memory Exit 2 Recall	Seats/Special Functions/Memory Seat Module/Driver Seat	The MSM activates the previously programmed seat directional motors when you select On. The motors should move the seat to the exit position for driver 2 or until you select Off.
Rear Up/Down	Seats/Special Functions/Memory Seat Module/Driver Seat	The MSM activates the seat rear vertical motor when you select Up or Down. The motor should tilt the rear of the seat in the up or down direction until it reaches it's end of travel.
Recline Forward/Rearward	Seats/Special Functions/Memory Seat Module/Driver Seat	The MSM activates the recline motor when you select Forward or Rearward. The motor should recline the seat back cushion in the forward or rearward direction until it reaches it's end of travel.
Seat Forward/Rearward	Seats/Special Functions/Memory Seat Module/Driver Seat	The MSM activates the seat horizontal motor when you select Forward or Rearward. The motor should move the entire seat in the forward or rearward direction until the it reaches it's end of travel.

SCAN TOOL DATA LIST

The scan tool data list contains all the seat system related parameters that are available on the scan tool. The parameters in the list are arranged in alphabetical order. The column, Data List, indicates the location of the parameter within the scan tool menu selections.

The typical data values are obtained from a properly operating vehicle under the conditions specified in the second row of the scan tool data list table. Comparison of the parameter values from the suspect vehicle with the typical data values may reveal the source of the customer concern.

Memory Seat Module

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Operating Conditions: Ignition ON/Engine OFF			
Base Model Part Number	Module ID Information	Numeric	Varies
Calibration Part Number	Module ID Information	Numeric	Varies
Driver Seat Front Vertical Sensor	Seat 1 Info	Volts	0.0-5.0 Volts

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Driver Seat Horizontal Sensor	Seat 1 Info	Volts	0.0-5.0 Volts
Driver Seat HVC Level	Seat 1 HVC Data	High/Medium/Low	High
Driver Seat HVC Mode	Seat 1 HVC Data	Off/Back & Cushion/Back Only/Cool	Off
Driver Seat Rear Vertical Sensor	Seat 1 Info	Volts	0.0-5.0 Volts
Driver Seat Recline Sensor	Seat 1 Info	Volts	0.0-5.0 Volts
End Model Part Number	Module ID Information	Numeric	Varies
Front Vertical Downward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Front Vertical Motor Downward	Seat 1 Outputs	Active/Inactive	Inactive
Front Vertical Motor Upward	Seat 1 Outputs	Active/Inactive	Inactive
Front Vertical Upward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Horizontal Forward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Horizontal Motor Forward	Seat 1 Outputs	Active/Inactive	Inactive
Horizontal Motor Rearward	Seat 1 Outputs	Active/Inactive	Inactive
Horizontal Rearward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Julian Date of Build	Module ID Information	Numeric	Varies
Lumbar Downward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Lumbar Forward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Lumbar Horizontal Position	Memory Data 1	Volts	0.0-5.0 Volts
Lumbar Horizontal Position	Memory Data 2	Volts	0.0-5.0 Volts
Lumbar Horizontal Sensor	Seat 1 Info	Volts	0.0-5.0 Volts
Lumbar Motor Downward	Seat 1 Outputs	Active/Inactive	Inactive
Lumbar Motor Forward	Seat 1 Outputs	Active/Inactive	Inactive
Lumbar Motor Rearward	Seat 1 Outputs	Active/Inactive	Inactive
Lumbar Motor Upward	Seat 1 Outputs	Active/Inactive	Inactive
Lumbar Rearward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Lumbar Upward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Lumbar Vertical Position	Memory Data 1	Volts	0.0-5.0 Volts
Lumbar Vertical Position	Memory Data 2	Volts	0.0-5.0 Volts
Lumbar Vertical Sensor	Seat 1 Info	Volts	0.0-5.0 Volts
Passenger Seat HVC Level	Seat 2 HVC Data	High/Medium/Low	High

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Passenger Seat HVC Mode	Seat 2 HVC Data	Off/Back & Cushion/Back Only/Cool	Off
Rear Vertical Downward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Rear Vertical Motor Downward	Seat 1 Outputs	Active/Inactive	Inactive
Rear Vertical Motor Upward	Seat 1 Outputs	Active/Inactive	Inactive
Rear Vertical Upward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Recline Forward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Recline Motor Forward	Seat 1 Outputs	Active/Inactive	Inactive
Recline Motor Rearward	Seat 1 Outputs	Active/Inactive	Inactive
Recline Rearward Switch	Seat 1 Inputs	Active/Inactive	Inactive
Seat Front Vertical Position	Memory Data 1	Volts	0.0-5.0 Volts
Seat Front Vertical Position	Memory Data 2	Volts	0.0-5.0 Volts
Seat Horizontal Position	Memory Data 1	Volts	0.0-5.0 Volts
Seat Horizontal Position	Memory Data 2	Volts	0.0-5.0 Volts
Seat Rear Vertical Position	Memory Data 1	Volts	0.0-5.0 Volts
Seat Rear Vertical Position	Memory Data 2	Volts	0.0-5.0 Volts
Seat Recline Position	Memory Data 1	Volts	0.0-5.0 Volts
Seat Recline Position	Memory Data 2	Volts	0.0-5.0 Volts
Software Part Number	Module ID Information	Numeric	Varies
Year Module Built	Module ID Information	Numeric	Varies

Door Switch(es)

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Operating Conditions: Ignition ON/Engine OFF			
Memory Recall Switches	Inputs	0.43 volts/2.74 volts/1.78 volts0.96 volts	Volts
Memory Switch 12 V Ref.	Data	Volts	B+
Seat Back Heat Mode Ind. Cmd.	Outputs	Off/On	Off
Seat Back Heat Mode Sw.	Inputs	Inactive/Active	Inactive
Seat Cool Mode Ind. Cmd	Outputs	Off/On	Off
Seat Cool Mode Switch	Inputs	Inactive/Active	Inactive

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Seat Heat High Ind. Cmd.	Outputs	Off/On	Off
Seat Heat Low Ind. Cmd.	Outputs	Off/On	Off
Seat Heat Medium Ind. Cmd.	Outputs	Off/On	OFF
Seat Heat Mode Cmd.	Outputs	Off/On	Off
Seat Heat Mode Sw.	Inputs	Inactive/Active	Inactive

Heated Seat Module

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Operating Conditions: Ignition ON/Engine OFF			
Base Model Part Number	Module ID Information	Numeric	Varies
Calibration Part Number	Module ID Information	Numeric	Varies
Driver Seat Back Heat Status	Seat 1 HVC Data	Inactive/Active	Inactive
Driver Seat Cushion Heat Status	Seat 1 HVC Data	Inactive/Active	Inactive
Driver Seat HVC Level	Seat 1 HVC Data	High/Medium/Low	High
Driver Seat HVC Mode	Seat 1 HVC Data	Off/Back & Cushion/Back Only	Off
End Model Part Number	Module ID Information	Numeric	Varies
Julian Date of Build	Module ID Information	Numeric	Varies
Passenger Seat Back Heat Status	Seat 2 HVC Data	Inactive/Active	Inactive
Passenger Seat Cushion Heat Status	Seat 2 HVC Data	Inactive/Active	Inactive
Passenger Seat HVC Level	Seat 2 HVC Data	High/Medium/Low	High
Passenger Seat HVC Mode	Seat 2 HVC Data	Off/Back & Cushion/Back Only	Off
Software Part Number	Module ID Information	Numeric	Varies
Year Module Built	Module ID Information	Numeric	Varies

SCAN TOOL DATA DEFINITIONS**Base Model Part Number**

The scan tool displays the 8 digit hardware part number of the module.

Calibration Part Number

The scan tool displays the 8 digit part number of the calibration incorporated into the module

Driver Seat Back Heat Status

The scan tool displays Inactive/Active. When the heated seat is on, the scan tool will display the status of the seat back heating element as Active.

Driver Seat Cushion Heat Status

The scan tool displays Inactive/Active. When the heated seat is on, the scan tool will display the status of the seat cushion heating element as Active.

Driver Seat Front Vertical Sensor

The scan tool displays 0-5.0 volts or 0-255 counts. The sensor potentiometer provides an analog voltage which varies directly with the seat front vertical position. High scan tool values (volts or counts) indicate that the seat front is in the up position and low values indicate that the seat front is in the down position.

Driver Seat Horizontal Sensor

The scan tool displays 0-5.0 volts or 0-255 counts. The sensor potentiometer provides an analog voltage which varies directly with the seat horizontal position. High scan tool values (volts or counts) indicate that the seat is in the forward position and low values indicate that the seat is in the rearward position.

Driver Seat HVC Level

The scan tool displays High/Medium/Low. When the any one of the driver seat heated or cooled seat switches are pressed once, the scan tool will display High indicating the high temperature setting. When the switch is pressed a second time, Medium will be displayed, indicating the medium temperature setting. When the switch is pressed a third time, Low will be displayed indicating the low temperature setting.

Driver Seat HVC Mode

The scan tool displays Off/Back & Cushion/Back Only/Cool. When any one of these heated or cool seat switches are pressed, the scan tool will display the switch input to the door module.

Driver Seat Rear Vertical Sensor

The scan tool displays 0-5.0 volts or 0-255 counts. The sensor potentiometer provides an analog voltage which varies directly with the seat rear vertical position. High scan tool values (volts or counts) indicate that the seat rear vertical is in the up position and low values indicate that the seat rear vertical is in the down position.

Driver Seat Recline Sensor

The scan tool displays 0-5.0 volts or 0-255 counts. The sensor potentiometer provides an analog voltage which varies directly with the seat recline position. High scan tool values (volts or counts) indicate that the seat recline is in the forward position and low values indicate that the seat recline is in the rearward position.

End Model Part Number

Before the module has been serviced or replaced, the scan tool displays the module production part number. Then, once the module has been replaced, the scan tool will display the new serviced part number.

Front Vertical Downward Switch

The scan tool displays Inactive/Active. When the seat front down switch is activated, the scan tool will momentarily display the switch input to the memory seat module as Active.

Front Vertical Motor Downward

The scan tool displays Inactive/Active. When the seat front down switch is activated or when a memory recall occurs, the scan tool will momentarily display Active while the output from the memory seat module is commanding the seat front vertical motor in the down direction.

Front Vertical Motor Upward

The scan tool displays Inactive/Active. When the seat front up switch is activated or when a memory recall occurs, the scan tool will momentarily display Active while the output from the memory seat module is commanding the seat front vertical motor in the up direction.

Front Vertical Upward Switch

The scan tool displays Inactive/Active. When the seat front up switch is activated, the scan tool will momentarily display the switch input to the memory seat module as Active.

Horizontal Forward Switch

The scan tool displays Inactive/Active. When the seat forward switch is activated, the scan tool will momentarily display the switch input to the memory seat module as Active.

Horizontal Motor Forward

The scan tool displays Inactive/Active. When the seat forward switch is activated or when a memory recall occurs, the scan tool will momentarily display Active while the output from the memory seat module is commanding the seat horizontal motor in the forward direction.

Horizontal Motor Rearward

The scan tool displays Inactive/Active. When the seat rearward switch is activated or when a memory recall occurs, the scan tool will momentarily display Active while the output from the memory seat module is commanding the seat horizontal motor in the rearward direction.

Horizontal Rearward Switch

The scan tool displays Inactive/Active. When the seat rearward switch is activated, the scan tool will momentarily display the switch input to the memory seat module as Active.

Julian Date of Build

The scan tool displays a 3-digit number. This number is the day of the year that the module was built.

Lumbar Downward Switch

The scan tool displays Inactive/Active. When the driver seat lumbar down switch is activated, the scan tool will momentarily display the switch input to the memory seat module as Active.

Lumbar Forward Switch

The scan tool displays Inactive/Active. When the seat lumbar forward switch is activated, the scan tool will momentarily display switch input to the memory seat module as Active.

Lumbar Horizontal Position - Memory Data 1

The scan tool displays the volts or count values of the lumbar horizontal position stored in memory for driver 1.

Lumbar Horizontal Position - Memory Data 2

The scan tool displays the volts or count values of the lumbar horizontal position stored in memory for driver 2.

Lumbar Horizontal Sensor

The scan tool displays 0-5.0 volts or 0-255 counts. The sensor potentiometer provides an analog voltage which varies directly with the lumbar horizontal position. High scan tool values (volts or counts) indicate that the Lumbar is in the forward position and low values indicate that the lumbar is in the rearward position.

Lumbar Motor Downward

The scan tool displays Inactive/Active. When the driver seat lumbar down switch is activated or when a memory recall occurs, the scan tool will momentarily display Active while the output from the memory seat module is commanding the driver seat lumbar vertical motor in the down direction.

Lumbar Motor Forward

The scan tool displays Inactive/Active. When the driver seat lumbar forward switch is activated or when a memory recall occurs, the scan tool will momentarily display Active while the output from the memory seat module is commanding the lumbar horizontal motor in the forward direction.

Lumbar Motor Rearward

The scan tool displays Inactive/Active. When the driver seat lumbar rearward switch is activated or when a memory recall occurs, the scan tool will momentarily display Active while the output from the memory seat module is commanding the lumbar horizontal motor in the rearward direction.

Lumbar Motor Upward

The scan tool displays Inactive/Active. When the driver seat lumbar up switch is activated or when a memory recall occurs, the scan tool will momentarily display Active while the output from the memory module is commanding the lumbar vertical motor the up direction.

Lumbar Rearward Switch

The scan tool displays Inactive/Active. When the driver seat lumbar rearward switch is activated, the scan tool will momentarily display the switch input to the memory seat module as Active.

Lumbar Upward Switch

The scan tool displays Inactive/Active. When the driver seat lumbar up switch is activated, the scan tool will momentarily display the switch input to the memory seat module as Active.

Lumbar Vertical Position - Memory Data 1

The scan tool displays the volts or count values of the lumbar vertical position stored in memory for driver 1.

Lumbar Vertical Position - Memory Data 2

The scan tool displays the volts or count values of the lumbar vertical position stored in memory for driver 2.

Lumbar Vertical Sensor

The scan tool displays 0-5.0 volts or 0-255 counts. The sensor potentiometer provides an analog voltage which varies directly with the driver seat lumbar vertical position. High scan tool values (volts or counts) indicate that the lumbar is in the up position and low values indicate that the lumbar is in the down position.

Memory Recall Switches

The scan tool displays 0.43-2.74 volts. When the memory 1 switch is pressed, the scan tool will momentarily display 2.74 volts, when the memory 2 switch is pressed, 1.78 volts is displayed and when the EXIT switch is pressed, 0.96 volts is displayed.

Memory Switch 12 V Ref.

The scan tool displays the voltage supplied to the memory recall switch.

Passenger Seat Back Heat Status

The scan tool displays Inactive/Active. When the heated seat is on, the scan tool will display the status of the seat back heating element as Active.

Passenger Seat Cushion Heat Status

The scan tool displays Inactive/Active. When the heated seat is on, the scan tool will display the status of the seat cushion heating element as Active.

Passenger Seat HVC Level

The scan tool displays High/Medium/Low. When the any one of the passenger seat heated or cooled seat switches are pressed once, the scan tool will display High indicating the high temperature setting. When the switch is pressed a second time, Medium will be displayed, indicating the medium temperature setting. When the switch is pressed a third time, Low will be displayed indicating the low temperature setting.

Passenger Seat HVC Mode

The scan tool displays Off/Back & Cushion/Back Only/Cool. When any one of these heated or cool seat switches are pressed, the scan tool will display the switch input to the door module.

Personalization Option

This is the state of the personalization option as it is stored in the Dash Integration Module (DIM). When the Personalization Option is selected, the scan tool displays the directions to activate or deactivate the personalization option. The asterisk beside the option indicates that the personalization option is activated. The personalization option is normally set to the activated state during the assembly of the vehicle.

Rear Vertical Downward Switch

The scan tool displays Inactive/Active. When the seat rear down switch is activated, the scan tool will momentarily display the switch input to the memory seat module as Active.

Rear Vertical Motor Downward

The scan tool displays Inactive/Active. When the seat rear down switch is activated or when a memory recall occurs, the scan tool will momentarily display Active while the output from the memory seat module is commanding the seat rear vertical motor in the down direction.

Rear Vertical Motor Upward

The scan tool displays Inactive/Active. When the seat rear up switch is activated or when a memory recall occurs, the scan tool will momentarily display Active while the output from the memory seat module is commanding the seat rear vertical motor in the up direction.

Rear Vertical Upward Switch

The scan tool displays Inactive/Active. When the seat rear up switch is activated, the scan tool will momentarily display the switch input to the memory seat module as Active.

Recline Forward Switch

The scan tool displays Inactive/Active. When the seat recline forward switch is activated, the scan tool will momentarily display the switch input to the memory seat module as Active.

Recline Motor Forward

The scan tool displays Inactive/Active. When the seat recline forward switch is activated or a memory recall occurs, the scan tool will momentarily display Active while the output from the memory seat module is commanding the seat recline motor in the forward direction.

Recline Motor Rearward

The scan tool displays Inactive/Active. When the seat recline rearward switch is activated or when a memory recall occurs, the scan tool will momentarily display Active while the output from the memory seat module is commanding the seat recline motor in the rearward direction.

Recline Rearward Switch

The scan tool displays Inactive/Active. When the seat recline rearward switch is activated, the scan tool will momentarily display the switch input to the memory seat module as Active.

Seat Back Heat Mode Cmd.

The scan tool displays Off/On. When the Heated Seat Back Only Mode Switch is activated, the scan tool will momentarily display On while the output from the door module signals the heated seat module to deactivate the heat from the seat cushion.

Seat Back Heat Mode Ind. Cmd.

The scan tool displays Off/On. When the Heated Seat Back Only Mode Switch is activated, this parameter indicates that the door module has illuminated the Back Only Mode Indicator.

Seat Back Heat Mode Sw.

The scan tool displays Off/On. When the Heated Seat Back Only Mode Switch is activated, the scan tool will momentarily display the switch input to the door module as On.

Seat Cool Mode Ind. Cmd.

The scan tool displays Off/On. When the Heated Seat COOL Mode Switch is activated, this parameter indicates that the door module has illuminated the Cool Mode Indicator.

Seat Cool Mode Switch

The scan tool displays Inactive/Active. When the Heated Seat COOL Switch is activated, the scan tool will momentarily display the switch input to the door module as Active.

Seat Front Vertical Position - Memory Data 1

The scan tool displays the volts or count values of the seat front vertical position stored in memory for driver 1.

Seat Front Vertical Position - Memory Data 2

The scan tool displays the volts or count values of the seat front vertical position stored in memory for driver 2.

Seat Heat High Ind. Cmd.

The scan tool displays Off/On. When the seat BACK ONLY, BACK/CUSHION or COOL Mode Switch is pressed, this parameter indicates that the door module has illuminated the seat high temperature indicator.

Seat Heat Low Ind. Cmd.

The scan tool displays Off/On. When the seat BACK ONLY, BACK/CUSHION or COOL Mode Switch is pressed, this parameter indicates that the door module has illuminated the seat low temperature indicator.

Seat Heat Medium Ind. Cmd.

The scan tool displays Off/On. When the seat BACK ONLY, BACK/CUSHION or COOL Mode Switch is pressed, this parameter indicates that the door module has illuminated the seat medium temperature indicator.

Seat Heat Mode Cmd.

The scan tool displays Off/On. When the Heated Seat Back/Cushion Switch is first activated, the scan tool will momentarily display On, while the output from the door module signals the heated seat module to turn on to the High heat mode. With each additional activation of the switch, the heated seat module will increment through the remaining temperature modes (Med/Low/Off).

Seat Heat Mode Sw.

The scan tool displays Inactive/Active. When the Heated Seat BACK/CUSHION Switch is activated, the scan tool will momentarily display the switch input to the door module as Active.

Seat Horizontal Position - Memory Data 1

The scan tool displays the volts or count values of the seat horizontal position stored in memory for driver 1.

Seat Horizontal Position - Memory Data 2

The scan tool displays the volts or count values of the seat horizontal position stored in memory for driver 2.

Seat Rear Vertical Position - Memory Data 1

The scan tool displays the volts or count values of the seat rear vertical position stored in memory for driver 1.

Seat Rear Vertical Position - Memory Data 2

The scan tool displays the volts or count values of the seat rear vertical position stored in memory for driver 2.

Seat Recline Position - Memory Data 1

The scan tool displays the volts or count values of the seat back recline position stored in memory for driver 1.

Seat Recline Position - Memory Data 2

The scan tool displays the volts or count values of the seat back recline position stored in memory for driver 2.

Software Part Number

The scan tool displays the 8 digit part number of the software incorporated into the module.

Year Module Built

The scan tool displays a 4-digit number. This number represents the year the module was built.

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DTC Descriptors**DTC B1335 00**

Device Power 3 Circuit

DTC B1335 0B

Device Power 3 Circuit Current Above Threshold

DTC B1335 42

Device Power 3 Circuit Calibration Data Not Programmed

DTC B1335 4B

Device Power 3 Circuit Calibration Out of Range

Diagnostic Fault InformationPerform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.**DTC B1335**

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Seat Front Vertical Motor Down Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Front Vertical Motor Up Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Horizontal Motor Forward Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Horizontal Motor Rearward Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Lumbar Horizontal Motor Forward Control	B3920 02	2	B3920 01	B1335 00 B1335 0B
Driver Seat Lumbar Horizontal Motor Rearward Control	B3920 02	2	B3920 01	B1335 00 B1335 0B
Driver Seat Lumbar Vertical Motor Down	B3920 02	2	B3920 01	B1335 00 B1335 0B

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Control				
Driver Seat Lumbar Vertical Motor Up Control	B3920 02	2	B3920 01	B1335 00 B1335 0B
Driver Seat Rear Vertical Motor Down Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Rear Vertical Motor Up Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Recline Motor Forward Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
Driver Seat Recline Motor Rearward Control	B3920 02	1	B3920 01	B1335 00 B1335 0B
1. Power Seat Inoperative with Memory - A45 2. Lumbar Support inoperative with Memory - A45				

Circuit/System Description

The memory seat module (MSM) monitors the current supplied to the driver seat adjuster motors, recline motor and both lumbar motors. It can detect both absolute and differential current levels from the seat motors. Absolute current is the maximum allowable current the module will supply to the motors. A differential current mismatch occurs when the current supplied to the seat motors does not match the current returning from the motors.

Conditions for Running the DTC

The seat adjuster motors, recline motor or the lumbar motors must be active.

Conditions for Setting the DTC**B1335 00**

Current out of the module does not match the current returning to the module from 1.5-5.0A.

B1335 0B

The differential current measured through the high and low side of the power rail is within tolerance of each other, but the absolute current or an over-current has exceeded the maximum value.

B1335 42

This DTC will set if the module calibration is not programmed.

B1335 4B

This DTC will set if the module calibration is out of range.

Action Taken When the DTC Sets

All movement related to the seat cushion and recline motors is aborted.

Conditions for Clearing the DTC

- The current DTC will clear and set the code to history, 3 seconds after no motor movement is requested or the current is no longer mismatched and the ignition is cycled OFF then back to ACC or RUN.
- The history DTC will clear after 50 consecutive fault-free ignition cycles have occurred.

Reference Information**Schematic Reference****Driver Seat Schematics****Connector End View Reference****Power Seat Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing**B1335 00 or B1335 0B**

1. Use a scan tool to clear the current and history diagnostic trouble code.
2. Ignition ON, determine which motor set this DTC by operating the following motors one at a time in both directions. Check for the DTC to set between each motor test.
 - Driver seat front vertical motor
 - Driver seat rear vertical motor

- Driver seat horizontal motor
 - Driver seat recline motor
 - Driver seat lumbar horizontal motor
 - Driver seat lumbar vertical motor
3. Use a scan tool to clear the current and history diagnostic trouble code.
 4. Ignition OFF, disconnect the harness connector at the seat or lumbar motor for which the DTC set.
 5. Ignition ON, operate the motor in both directions then verify that the DTC set.
 - If the DTC did not set, test or replace the motor.
 6. Ignition OFF, disconnect the appropriate (C1, C4) harness connector at the MSM.
 7. Ignition ON, test for 0 volt between each motor control circuit and ground.
 - If greater than 0 volt, test the control circuit for a short to voltage.
 8. Test for infinite resistance between each control circuit and ground.
 - If less than infinite resistance, repair the control circuit for a short to ground.
 9. Test for infinite resistance between the motor control circuits:
 - If less than infinite resistance, test for a short between the control circuits.
 10. If all circuits test normal, test or replace the MSM.

B1335 42 or B1335 4B

If either DTC is set, the only option is module replacement.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Front Seat Adjuster Replacement**
- **Front Seat Recliner Actuator Motor Replacement**
- **Front Seat Lumbar Support Replacement (w/AL2)** or **Front Seat Lumbar Support Replacement (w/AM3)**
- **Control Module References** for memory seat module replacement, setup and programming

DTC B1395

DTC Descriptors

DTC B1395 02

Device Voltage Reference Output Circuit Shorted to Ground

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DTC B1395 05

Device Voltage Reference Output Circuit Shorted to Battery or Open

Diagnostic Fault InformationPerform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.**DTC B1395**

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Memory Seat/Mirror Sensor Low Reference	-	B1825 01, B1850 01, B1860 01, B2355 01, B2365 01, B2375 01	-	-
5-Volt Reference	B1395 02 B1825 06, B1850 06, B1860 06, B2355 06, B2365 06, B2375 06	B1825 06, B1850 06, B1860 06, B2355 06, B2365 06, B2375 06	B1395 05 B1825 01, B1850 01, B1860 01, B2355 01, B2365 01, B2375 01	-
Driver Seat Front Vertical Position Sensor Signal	B2355 06	B2355 06	B2355 01	-
Driver Seat Rear Vertical Position Sensor Signal	B2365 06	B2365 06	B2365 01	-
Driver Seat Horizontal Position Sensor Signal	B2375 06	B2375 06	B2375 01	-
Driver Seat Lumbar Vertical Position Sensor Signal	B1860 06	B1860 06	B1860 01	-
Driver Seat Lumbar Horizontal Position Sensor Signal	B1850 06	B1850 06	B1850 01	-
Driver Seat Recline Position Sensor Signal	B1825 06	B1825 06	B1825 01	-

Circuit/System Description

The memory seat module (MSM) supplies a 5-volt reference voltage to the driver seat horizontal, front vertical, rear vertical, recline and both lumbar position sensors. The MSM

monitors this reference voltage to ensure the accuracy of the voltages being returned from the sensors. If the voltage exceeds the normal operating range, errors will occur in the memory recall operations of the seat.

Conditions for Running the DTC

The MSM must be powered.

Conditions for Setting the DTC**B1395 02**

The reference voltage drops below 4.8 volts for more than 300 mS.

B1395 05

The reference voltage exceeds 5.2 volts for more than 300 mS.

Action Taken When the DTC Sets

All memory recall functions will be disabled.

Conditions for Clearing the DTC

- The current DTC will clear and set the code to history, 3 seconds after the reference voltage returns to the normal operating range and the ignition is cycled OFF then back to ACC or RUN.
- The history DTC will clear after 50 consecutive fault-free ignition cycles have occurred.

Diagnostic Aids

- All position sensors use common ground and 5-volt reference circuits.
- If the 5-volt reference circuit is shorted to voltage multiple position sensor codes will set.
- If the 5-volt reference circuit is shorted to ground multiple position sensor codes will set.
- A short to voltage on one of the position sensor signal circuits may set this DTC.
- An internal short to ground in one of the position sensors may set this DTC.

Reference Information**Schematic Reference****Driver Seat Schematics****Connector End View Reference****Power Seat Connector End Views**

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing

Ignition ON, test for 4.8-5.2 volts between the 5-volt reference circuit and ground.

- If less than 4.8 volts, test the 5-volt reference circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the MSM.
- If greater than 5.2 volts, test the following circuits for a short to voltage. If all circuits test normal, replace the MSM.
- 5-volt reference circuit
- Each seat and lumbar position sensor signal circuit

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Front Seat Adjuster Replacement**
- **Front Seat Lumbar Support Replacement (w/AL2)** or **Front Seat Lumbar Support Replacement (w/AM3)**
- **Front Seat Recliner Position Sensor Replacement**
- **Control Module References** for memory seat module replacement, setup and programming

DTC B1735, B1740, B1745, B1750, B1755, B1760, B1815 OR B1820

DTC Descriptors**DTC B1735 01**

Seat Front Up Switch Circuit Short to Battery

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DTC B1740 01

Seat Front Down Switch Circuit Short to Battery

DTC B1745 01

Seat Rear Up Switch Circuit Short to Battery

DTC B1750 01

Seat Rear Down Switch Circuit Short to Battery

DTC B1755 01

Seat Assembly Forward Switch Circuit Short to Battery

DTC B1760 01

Seat Assembly Rearward Switch Circuit Short to Battery

DTC B1815 01

Seat Recline Forward Switch Circuit Short to Battery

DTC B1820 01

Seat Recline Rearward Switch Circuit Short to Battery

Diagnostic Fault InformationPerform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.**DTC B1735, B1740, B1745, B1750, B1755, B1760, B1815 or B1820**

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Front Vertical Up Switch Signal	3	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
			B1735 01,	

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Front Vertical Down Switch Signal	3	1	B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Rear Vertical Up Switch Signal	3	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Rear Vertical Down Switch Signal	3	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Horizontal Forward Switch Signal	3	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Horizontal Rearward Switch Signal	3	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
			B1735 01, B1740 01, B1745 01,	

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Recline Forward Switch Signal	3	1	B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Recline Rearward Switch Signal	3	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Lumbar Up Switch Signal	3	2	2	-
Lumbar Down Switch Signal	3	2	2	-
Lumbar Forward Switch Signal	3	2	2	-
Lumbar Rearward Switch Signal	3	2	2	-
1. Power Seat Inoperative with Memory-A45 2. Lumbar Support Inoperative with Memory-A45 3. Scan Tool Does Not Communicate with Low Speed GMLAN Device				

Circuit/System Description

When the power seat switches are pressed, they send a 12-volt signal through the switch signal circuits to the memory seat module (MSM). The MSM then commands the driver seat and lumbar motors to move in response to the switch signals.

Conditions for Running the DTC

The MSM must be powered.

Conditions for Setting the DTC

- If a seat switch circuit is active in one direction and the switch for the opposite direction is pressed, this DTC will set.
- A short to voltage on a switch signal circuit.

Action Taken When the DTC Sets

- A motor output driven in response to a switch considered failed, is deactivated for both

directions.

- All memory recall commands are ignored.
- The MSM will respond to any other switch signal that has not set a DTC.

Conditions for Clearing the DTC

- The current DTC will clear and set the code to history, 3 seconds after the fault is no longer present and the ignition is cycled OFF then back to ACC or RUN.
- The history DTC will clear after 50 consecutive fault-free ignition cycles have occurred.

Diagnostic Aids

- If one of the switch signal circuits is shorted to voltage, multiple codes will set.
- If a switch is stuck in one direction and the switch is pressed in the opposite direction, a single code will set.

Reference Information**Schematic Reference****Driver Seat Schematics****Connector End View Reference****Power Seat Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

Ignition ON, observe all scan tool Memory Seat Module seat switch parameters while pressing and releasing the each seat directional switch. The readings should change between Inactive and Active.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the seat adjuster switch.
2. Verify the scan tool seat switch parameters are Inactive.
 - If not the specified value, test the signal circuit that displays Active for a short to voltage. If the circuit tests normal, replace the MSM.
3. If all circuits test normal, test or replace the seat adjuster switch.

Component Testing

1. Ignition OFF, disconnect the harness connector at the seat adjuster switch.
2. Test for infinite resistance between each seat direction signal terminal (A-D F-K) and the switch B+ terminal E with the switch in the open position.
 - If less than the specified value, replace the switch.
3. Test for less than 1 ohm of resistance between each seat direction signal terminal (A-D F-K) and the switch B+ terminal E with the switch in the closed position.
 - If greater than the specified value, replace the switch.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Power Seat Switch Replacement**
- **Control Module References** for memory seat module replacement, setup and programming

DTC B1825, B1850, B1860, B2355, B2365 OR B2375**DTC Descriptors****DTC B1825 01**

Seat Recline Position Sensor Circuit Short to Battery

DTC B1825 06

Seat Recline Position Sensor Circuit Short to Ground or Open

DTC B1825 5A

Seat Recline Position Sensor Direction of Motion Reversed

DTC B1850 01

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Seat Lumbar Horizontal Position Sensor Circuit Short to Battery

DTC B1850 06

Seat Lumbar Horizontal Position Sensor Circuit Short to Ground or Open

DTC B1850 5A

Seat Lumbar Horizontal Position Sensor Direction of Motion Reversed

DTC B1860 01

Seat Lumbar Vertical Position Sensor Circuit Short to Battery

DTC B1860 06

Seat Lumbar Vertical Position Sensor Circuit Short to Ground or Open

DTC B1860 5A

Seat Lumbar Vertical Position Sensor Direction of Motion Reversed

DTC B2355 01

Left Front Seat Front Vertical Position Sensor Circuit Short to Battery

DTC B2355 06

Left Front Seat Front Vertical Position Sensor Circuit Short to Ground or Open

DTC B2355 5A

Left Front Seat Front Vertical Position Sensor Direction of Motion Reversed

DTC B2365 01

Left Front Seat Rear Vertical Position Sensor Circuit Short to Battery

DTC B2365 06

Left Front Seat Rear Vertical Position Sensor Circuit Short to Ground or Open

DTC B2365 5A

Left Front Seat Rear Vertical Position Sensor Direction of Motion Reversed

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DTC B2375 01

Left Front Seat Assembly Horizontal Position Sensor Circuit Short to Battery

DTC B2375 06

Left Front Seat Assembly Horizontal Position Sensor Circuit Short to Ground or Open

DTC B2375 5A

Left Front Seat Assembly Horizontal Position Sensor Direction of Motion Reversed

Diagnostic Fault InformationPerform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.**DTC B1825, B1850, B1860, B2355, B2365 or B2375**

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Memory Seat/Mirror Sensor Low Reference	-	B1825 01, B1850 01, B1860 01, B2355 01, B2365 01, B2375 01	-	B1825 5A, B1850 5A, B1860 5A, B2355 5A, B2365 5A, B2375 5A
5-Volt Reference	B1395 02 B1825 06, B1850 06, B1860 06, B2355 06, B2365 06, B2375 06	B1825 06, B1850 06, B1860 06, B2355 06, B2365 06, B2375 06	B1395 05 B1825 01, B1850 01, B1860 01, B2355 01, B2365 01, B2375 01	B1825 5A, B1850 5A, B1860 5A, B2355 5A, B2365 5A, B2375 5A
Driver Seat Front Vertical Position Sensor Signal	B2355 06	B2355 06	B2355 01	-
Driver Seat Rear Vertical Position Sensor Signal	B2365 06	B2365 06	B2365 01	-
Driver Seat Horizontal Position Sensor Signal	B2375 06	B2375 06	B2375 01	-
Driver Seat Lumbar Vertical Position	B1860 06	B1860 06	B1860 01	-

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Sensor Signal				
Driver Seat Lumbar Horizontal Position Sensor Signal	B1850 06	B1850 06	B1850 01	-
Driver Seat Recline Position Sensor Signal	B1825 06	B1825 06	B1825 01	-
Driver Seat Front Vertical Motor Down Control	B3920 02	1	B3920 01	B2355 5A
Driver Seat Front Vertical Motor Up Control	B3920 02	1	B3920 01	B2355 5A
Driver Seat Rear Vertical Motor Down Control	B3920 02	1	B3920 01	B2365 5A
Driver Seat Rear Vertical Motor Up Control	B3920 02	1	B3920 01	B2365 5A
Driver Seat Horizontal Motor Forward Control	B3920 02	1	B3920 01	B2375 5A
Driver Seat Horizontal Motor Rearward Control	B3920 02	1	B3920 01	B2375 5A
Driver Seat Recline Motor Forward Control	B3920 02	1	B3920 01	B1825 5A
Driver Seat Recline Motor Rearward Control	B3920 02	1	B3920 01	B1825 5A
Driver Seat Lumbar Motor Down Control	B3920 02	2	B3920 01	B1860 5A
Driver Seat Lumbar Motor Up Control	B3920 02	2	B3920 01	B1860 5A
Driver Seat Lumbar Motor Forward Control	B3920 02	2	B3920 01	B1850 5A
Driver Seat Lumbar Motor Rearward Control	B3920 02	2	B3920 01	B1850 5A

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1. Power seat inoperative
2. Lumbar inoperative

Circuit/System Description

The position sensor that set this diagnostic trouble code (DTC) is either attached to the seat directional motor drive cable or directly to the motor it monitors. It receives a 5-volt reference and ground from the memory seat module (MSM). The sensor sends a voltage signal that varies with the movement of the seat through the signal circuit to the MSM. Then based on this voltage signal, the MSM determines the position of the seat.

Conditions for Running the DTC

The MSM must be powered.

Conditions for Setting the DTC

B1825/B1850/B1860/B2355/B2365/B2375 01

If the MSM sees the analog input from this sensor is greater than 4.65 volts, the sensor will be considered out of range and the MSM will set this DTC.

B1825/B1850/B1860/B2355/B2365/B2375 06

If the MSM sees the analog input from this sensor is less than 0.27 volt, the sensor will be considered out of range and the MSM will set this DTC.

B1825/B1850/B1860/B2355/B2365/B2375 5A

This DTC will set, if the MSM is controlling a motor in one direction and it's position sensor is tracking the motor in the opposite direction. The sensor is either mounted or wired incorrectly or the polarity of the motor control circuits are reversed.

Action Taken When the DTC Sets

All memory recall and seat massage functions will be disabled.

Conditions for Clearing the DTC

- The current DTC will clear and set to history, when the MSM sees the analog input from the sensor as between 0.27 volt and 4.65 volts and the ignition is cycled OFF then back to ACC or RUN.
- The history DTC will clear after 50 consecutive fault-free ignition cycles have occurred.

Diagnostic Aids

- All position sensors use common ground and 5-volt reference circuits.

- If the 5-volt reference circuit is shorted to voltage multiple position sensor codes will set.
- If the 5-volt reference circuit is shorted to ground multiple position sensor codes will set.
- If the sensor ground circuit is open multiple codes will set.
- DTC failure type 5A will set if the sensor setting this DTC is either mounted or wired incorrectly or the polarity of the motor control circuits are reversed.

Reference Information**Schematic Reference**

- **Driver Seat Schematics**
- **Passenger Seat Schematics**

Connector End View Reference**Power Seat Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

Ignition ON, observe the scan tool Driver Seat and Lumbar position sensor parameters. The readings should be between 0.27 volt and 4.65 volts and change while adjusting seat and lumbar positions.

Circuit/System Testing**B1825**

1. Ignition OFF, disconnect the C2 harness connector at the seat recline motor.
2. Ignition OFF, test for less than 2 ohms of resistance between the low reference circuit terminal 3 and ground.
 - If greater than 2 ohms, test the low reference circuit for an open/high resistance. If

the circuit tests normal, replace the MSM.

3. Ignition ON, test for 4.8-5.2 volts between the 5-volt reference circuit terminal 1 and ground.
 - If less than 4.8 volts, test the 5-volt reference circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the MSM.
 - If greater than 5.2 volts, test the 5-volt reference circuit for a short to voltage. If the circuit tests normal, replace the MSM.
4. Verify the scan tool Driver Seat Recline Sensor parameter is less than 2 volts.
 - If greater than 2 volts, test the signal circuit terminal 2 for a short to voltage. If the circuit tests normal, replace the MSM.
5. Install a 3A fused jumper wire between the signal circuit terminal 2 and the 5-volt reference circuit terminal 1. Verify the scan tool Driver Seat Recline Sensor parameter is greater than 4.65 volts.
 - If less than 4.65 volts, test the signal circuit for short to ground or an open/high resistance. If the circuit tests normal, replace the MSM.
6. If all circuits test normal, test or replace the seat recline position sensor.

B2355/B2365/B2375

1. Ignition OFF, disconnect the C2 harness connector at the seat adjuster motor assembly.
2. Ignition OFF, test for less than 2 ohms of resistance between the low reference circuit terminal 2 and ground.
 - If greater than 2 ohms, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the MSM.
3. Ignition ON, test for 4.8-5.2 volts between the 5-volt reference circuit terminal 6 and ground.
 - If less than 4.8 volts, test the 5-volt reference circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the MSM.
 - If greater than 5.2 volts, test the 5-volt reference circuit for a short to voltage. If the circuit tests normal, replace the MSM.
4. Verify the appropriate scan tool Driver Seat Sensor parameter is less than 2 volts.
 - If greater than 2 volts, test the appropriate signal circuit for a short to voltage. If the circuit tests normal, replace the MSM.
 - Seat front vertical position sensor terminal 1
 - Seat rear vertical position sensor terminal 5
 - Seat horizontal position sensor terminal 3
5. Install a 3A fused jumper wire between the signal circuit and the 5-volt reference circuit terminal 6. Verify the appropriate scan tool Driver Seat position sensor parameter is greater than 4.65 volts.

- Seat front vertical position sensor terminal 1
 - Seat rear vertical position sensor terminal 5
 - Seat horizontal position sensor terminal 3
 - If less than 4.65 volts, test the signal circuit for short to ground or an open/high resistance. If the circuit tests normal, replace the MSM.
6. If all circuits test normal, test or replace the seat adjuster motor assembly.

B1850/B1860

1. Ignition OFF, disconnect the C2 harness connector at the seat lumbar motor assembly.
2. Ignition OFF, test for less than 2 ohms of resistance between the low reference circuit terminal A and ground.
 - If greater than 2 ohms, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the MSM.
3. Ignition ON, test for 4.8-5.2 volts between the 5-volt reference circuit terminal C and ground.
 - If less than 4.8 volts, test the 5-volt reference circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the MSM.
 - If greater than 5.2 volts, test the 5-volt reference circuit for a short to voltage. If the circuit tests normal, replace the MSM.
4. Verify the appropriate scan tool Lumbar Sensor parameter is less than 2 volts.
 - If greater than 2 volts, test the appropriate signal circuit for a short to voltage. If the circuit tests normal, replace the MSM.
 - Lumbar vertical position sensor terminal B
 - Lumbar horizontal position sensor terminal D
5. Install a 3A fused jumper wire between the signal circuit and the 5-volt reference circuit terminal C. Verify the appropriate scan tool Lumbar Sensor parameter is greater than 4.65 volts.
 - Lumbar vertical position sensor terminal B
 - Lumbar horizontal position sensor terminal D
 - If less than 4.65 volts, test the signal circuit for short to ground or an open/high resistance. If the circuit tests normal, replace the MSM.
6. If all circuits test normal, test or replace the lumbar motor assembly.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Front Seat Adjuster Replacement**

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- **Front Seat Lumbar Support Replacement (w/AL2) or Front Seat Lumbar Support Replacement (w/AM3)**
- **Front Seat Recliner Position Sensor Replacement**
- **Control Module References** for memory seat module replacement, setup and programming

DTC B1925 OR B2170

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC B1925 02

Left Seat Heater Cushion Sensor Circuit Shorted to Ground

DTC B2170 02

Right Seat Heater Cushion Sensor Circuit Shorted to Ground

Diagnostic Fault Information

DTC B1925 or B2170

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver heated seat back element supply voltage	B2508 02	B1935 0C	B2345 00 B2508 01	B1935 0B
Driver heated seat back element control	B2345 00 B2508 02	B1935 0C	B2345 00 B2508 01	B1935 0B
Driver heated seat back temperature sensor signal	B2435 02	B1935 04 B1935 1F	B1935 04 B1935 1F	B1935 0A
Driver heated seat back temperature sensor low reference	-	B1935 04 B1935 1F	-	-
Driver heated seat cushion element supply voltage	B2508 02	B2425 0C	B2345 00 B2508 01	B2425 0B
Driver heated seat	B2345 00		B2345 00	

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cushion element control	B2508 02	B2425 0C	B2508 01	B2425 0B
Driver heated seat cushion temperature sensor signal	B1925 02 B2425 1F	B2425 04 B2425 1F	B2425 04 B2425 1F	B2425 0A
Driver heated seat cushion temperature sensor low reference	-	B2425 04 B2425 1F	-	-
Passenger heated seat back element supply voltage	B2508 02	B2180 0C	B2345 00 B2508 01	B2180 0B
Passenger heated seat back element control	B2345 00 B2508 02	B2180 0C	B2345 00 B2508 01	B2180 0B
Passenger heated seat back temperature sensor signal	B2440 02	B2180 04 B2180 1F	B2180 04 B2180 1F	B2180 0A
Passenger heated seat back temperature sensor low reference	-	B2180 04 B2180 1F	-	-
Passenger heated seat cushion element supply voltage	B2508 02	B2430 0C	B2345 00 B2508 01	B2430 0B
Passenger heated seat cushion element control	B2345 00 B2508 02	B2430 0C	B2345 00 B2508 01	B2430 0B
Passenger heated seat cushion temperature sensor signal	B2170 02 B2430 1F	B2430 04 B2430 1F	B2430 04 B2430 1F	B2430 0A
Passenger heated seat cushion temperature sensor low reference	-	B2430 04 B2430 1F	-	-

Circuit/System Description

The heated seat temperature sensor that set this diagnostic trouble code (DTC) is located in the seat cushion just under the seat cover with the seat heating element. The memory seat module (MSM) supplies a separate 5-volt reference voltage through the temperature sensor signal circuit and a ground through the low reference circuit to the sensor. The module monitors the voltage of the sensor signal circuit to determine the temperature of the seat. The temperature sensor varies in resistance based on the temperature of the heating element, causing the signal voltage to change. Once the seat reaches the set temperature, the module will then cycle the control circuits of the heating elements ON and OFF in order to maintain the desired seat temperature based on the feedback voltage from the sensors.

Conditions for Running the DTC

The memory seat module must be powered.

Conditions for Setting the DTC

The temperature sensor voltage drops below 0.80 volt for more than 1 second.

Action Taken When the DTC Sets

The heated seat function for the affected seat will be disabled.

Conditions for Clearing the DTC

- The current DTC will clear and set the code to history, 3 seconds after the reference voltage returns to the normal operating range and the ignition is cycled OFF then back to ACC or RUN.
- The history DTC will clear after 50 consecutive fault-free ignition cycles have occurred.

Reference Information**Schematic Reference**

- **Driver Seat Schematics**
- **Passenger Seat Schematics**

Connector End View Reference**Power Seat Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing

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1. Ignition OFF, disconnect the (C2, C5) harness connectors at the memory seat module.
2. Test for infinite resistance between the driver seat cushion temperature sensor signal circuit terminal 1 (C5) and ground.
 - If less than the specified range, test the signal circuit for a short to ground.
3. Test for 2.2K-300K ohms of resistance between the signal circuit terminal 1 (C5) and the low reference circuit terminal 3 (C2).
 - If greater than the specified range, test the signal circuit and the low reference circuit for a short to voltage or an open/high resistance. If the circuits test normal, replace the seat cushion temperature sensor.
 - If less than the specified range, test for a short between the signal and low reference circuits. If the circuits test normal, replace the seat cushion temperature sensor.
4. If all circuits test normal, replace the memory seat module.

DTC B2170 Passenger Seat Cushion Temperature Sensor

1. Ignition OFF, disconnect the (C2, C5) harness connectors at the memory seat module.
2. Test for infinite resistance between the passenger seat cushion temperature sensor signal circuit terminal 2 (C5) and ground.
 - If less than the specified range, test the signal circuit for a short to ground.
3. Test for 2.2K-300K ohms of resistance between the signal circuit terminal 2 (C5) and the low reference circuit terminal 6 (C2).
 - If greater than the specified range, test the signal circuit and low reference circuit for a short to voltage or an open/high resistance. If the circuits test normal, replace the seat cushion temperature sensor.
 - If less than the specified range, test for a short between the signal and low reference circuits. If the circuits test normal, replace the seat cushion temperature sensor.
4. If all circuits test normal, replace the memory seat module.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Driver Seat Cushion Heater and Passenger Seat Cushion Heater Replacement**
- **Control Module References** for the memory seat module replacement, setup and programming.

DTC B1935 OR B2180

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

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- Review Strategy Based Diagnosis for an overview of the diagnostic approach.
- Diagnostic Procedure Instructions provides an overview of each diagnostic category.

DTC Descriptors

DTC B1935 04

Left Seat Back Heater Circuit Open

DTC B1935 0A

Left Seat Back Heater Circuit Rate of Change Below Threshold

DTC B1935 0B

Left Seat Back Heater Circuit Current Above Threshold

DTC B1935 0C

Left Seat Back Heater Circuit Current Below Threshold

DTC B1935 1F

Left Seat Back Heater Circuit Intermittent

DTC B2180 04

Right Seat Back Heater Circuit Open

DTC B2180 0A

Right Seat Back Heater Circuit Rate of Change Below Threshold

DTC B2180 0B

Right Seat Back Heater Circuit Current Above Threshold

DTC B2180 0C

Right Seat Back Heater Circuit Current Below Threshold

DTC B2180 1F

Right Seat Back Heater Circuit Intermittent

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Diagnostic Fault Information

DTC B1935 or B2180

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver heated seat back element supply voltage	B2508 02	B1935 0C	B2345 00 B2508 01	B1935 0B
Driver heated seat back element control	B2345 00 B2508 02	B1935 0C	B2345 00 B2508 01	B1935 0B
Driver heated seat back temperature sensor signal	B2435 02	B1935 04 B1935 1F	B1935 04 B1935 1F	B1935 0A
Driver heated seat back temperature sensor low reference	-	B1935 04 B1935 1F	-	-
Driver heated seat cushion element supply voltage	B2508 02	B2425 0C	B2345 00 B2508 01	B2425 0B
Driver heated seat cushion element control	B2345 00 B2508 02	B2425 0C	B2345 00 B2508 01	B2425 0B
Driver heated seat cushion temperature sensor signal	B1925 02 B2425 1F	B2425 04 B2425 1F	B2425 04 B2425 1F	B2425 0A
Driver heated seat cushion temperature sensor low reference	-	B2425 04 B2425 1F	-	-
Passenger heated seat back element supply voltage	B2508 02	B2180 0C	B2345 00 B2508 01	B2180 0B
Passenger heated seat back element control	B2345 00 B2508 02	B2180 0C	B2345 00 B2508 01	B2180 0B
Passenger heated seat back temperature sensor signal	B2440 02	B2180 04 B2180 1F	B2180 04 B2180 1F	B2180 0A
Passenger heated seat back temperature sensor low reference	-	B2180 04 B2180 1F	-	-
Passenger heated seat cushion element supply voltage	B2508 02	B2430 0C	B2345 00 B2508 01	B2430 0B
Passenger heated seat cushion element control	B2345 00 B2508 02	B2430 0C	B2345 00 B2508 01	B2430 0B

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Passenger heated seat cushion temperature sensor signal	B2170 02 B2430 1F	B2430 04 B2430 1F	B2430 04 B2430 1F	B2430 0A
Passenger heated seat cushion temperature sensor low reference	-	B2430 04 B2430 1F	-	-

Circuit/System Description

The left and right front passenger heated seats are controlled by the memory seat module. When the heated seat is active, power is applied to the seat cushion and back heater elements through a common voltage supply circuit. Each individual heater element is grounded by the memory seat module through separate low side drive control circuits. The heater element control circuits are pulse width modulated to ground by the module in order to control the seat temperatures by regulating the current flow through the heater elements. The module then monitors the current flow through the heating elements and the rate of change of the temperature sensor to verify correct heated seat operation.

Conditions for Running the DTC

The memory seat module is powered and the heated seat must be enabled.

Conditions for Setting the DTC

The heated seat system must be active.

B1935 04, B2180 04

The module does not detect a temperature change for up to 210 seconds.

B1935 0A, B2180 0A

The module detects that the set point temperature has not been reached for up to 8.5 minutes.

B1935 0B, B2180 0B

By measuring the current and voltage output to the seat back heating element every 10 seconds, the memory seat module calculates that the heating element resistance is below the minimum resistance value of 3.5 ohms.

B1935 0C, B2180 0C

By measuring the current and voltage output to the seat back heating element every 10 seconds, the memory seat module calculates that the heating element resistance is above the maximum resistance value of 10 ohms.

B1935 1F, B2180 1F

The temperature sensor voltage is erratic or changes suddenly.

Action Taken When the DTC Sets

The heated seat function for the affected seat will be disabled.

Conditions for Clearing the DTC

- The current DTC will clear and will the set code to history, when the malfunction is no longer present and the power mode changes to OFF then back to ACC or RUN.
- The history DTC will clear after 50 consecutive fault-free ignition cycles have occurred.

Reference Information**Schematic Reference**

- **Driver Seat Schematics**
- **Passenger Seat Schematics**

Connector End View Reference**Power Seat Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing**B1935 Driver Seat Back**

1. Ignition OFF, disconnect the (C1) harness connector at the memory seat module.
2. Test for less than 10 ohms of resistance between the seat back heater element supply voltage circuit terminal 14 and the control circuit terminal 1.
 - If greater than the specified range, test the supply voltage circuit and the control circuit for an open/high resistance. If the circuits test normal, replace the seat back

heating element.

3. Ignition OFF, disconnect the (C2, C5) harness connectors at the memory seat module.
4. Test for 1.7K-300K ohms of resistance between the seat back temperature sensor signal circuit terminal 4 (C5) and the low reference circuit terminal 2 (C2).
 - If greater than the specified range, test the signal circuit and the low reference circuit for a short to voltage or an open/high resistance. If the circuits test normal, replace the seat back temperature sensor.
 - If less than the specified range, test for a short between the signal and low reference circuits. If the circuits test normal, replace the seat back temperature sensor.
5. Ignition OFF, connect the (C1, C2, C5) harness connectors at the memory seat module.
6. Disconnect the harness connector at the seat back heating element/temperature sensor.
7. Ignition ON, test for 4.8-5.2 volts between the temperature sensor signal circuit terminal C and ground.
 - If greater than the specified range, test the signal circuit for a short to voltage. If the circuit tests normal, replace the memory seat module.
 - If less than the specified range, test the signal circuit for a short to ground. If the circuit tests normal, replace the memory seat module.
8. If all circuits test normal, replace the memory seat module.

B2180 Passenger Seat Back

1. Ignition OFF, disconnect the (C1) harness connector at the memory seat module.
2. Test for less than 10 ohms of resistance between the seat back heater element supply voltage circuit terminal 6 and the control circuit terminal 4.
 - If greater than the specified range, test the supply voltage circuit and the control circuit for an open/high resistance. If the circuits test normal, replace the seat back heating element.
3. Ignition OFF, disconnect the (C2, C5) harness connectors at the memory seat module.
4. Test for 1.7K-300K ohms of resistance between the seat back temperature sensor signal circuit terminal 3 (C5) and the low reference circuit terminal 5 (C2).
 - If greater than the specified range, test the signal circuit and the low reference circuit for a short to voltage or an open/high resistance. If the circuits test normal, replace the seat back temperature sensor.
 - If less than the specified range, test for a short between the signal and low reference circuits. If the circuits test normal, replace the seat back temperature sensor.
5. Ignition OFF, connect the (C1, C2, C5) harness connectors at the memory seat module.
6. Disconnect the harness connector at the seat back heating element/temperature sensor.
7. Ignition ON, test for 4.8-5.2 volts between the temperature sensor signal circuit terminal C and ground.

- If greater than the specified range, test the signal circuit for a short to voltage. If the circuit tests normal, replace the memory seat module.
 - If less than the specified range, test the signal circuit for a short to ground. If the circuit tests normal, replace the memory seat module.
8. If all circuits test normal, replace the memory seat module.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Driver Seat Back Cushion Heater and Passenger Seat Back Cushion Heater Replacement**
- **Control Module References** for the memory seat module replacement, setup and programming.

DTC B2345**Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors**DTC B2345 00**

Seat Heater Elements Short to Ground or Short to Battery

DTC B2345 4B

Seat Heater Elements Current Sensing Calibration Out of Range

DTC B2345 13

Seat Heater Elements Temperature Above Threshold

DTC B2345 42

Seat Heater Elements Current Sensing Calibration Not Programmed

Diagnostic Fault Information

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DTC B2345

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver heated seat back element supply voltage 1	B2508 02	B1935 0C	B2345 00 B2508 01	B1935 0B
Driver heated seat back element control 2	B2345 00 B2508 02	B1935 0C	B2345 00 B2508 01	B1935 0B
Driver heated seat back temperature sensor signal 3	B2435 02	B1935 04 B1935 1F	B1935 04 B1935 1F	B1935 0A
Driver heated seat back temperature sensor low reference 4	-	B1935 04 B1935 1F	-	-
Driver heated seat cushion element supply voltage 5	B2508 02	B2425 0C	B2345 00 B2508 01	B2425 0B
Driver heated seat cushion element control 6	B2345 00 B2508 02	B2425 0C	B2345 00 B2508 01	B2425 0B
Driver heated seat cushion temperature sensor signal 7	B1925 02 B2425 1F	B2425 04 B2425 1F	B2425 04 B2425 1F	B2425 0A
Driver heated seat cushion temperature sensor low reference	--	B2425 04 B2425 1F	--	--

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Passenger heated seat back element supply voltage	B2508 02	B2180 0C	B2345 00 B2508 01	B2180 0B
Passenger heated seat back element control	B2345 00 B2508 02	B2180 0C	B2345 00 B2508 01	B2180 0B B2180 0A
Passenger heated seat back temperature sensor signal	B2440 02	B2180 04 B2180 1F	B2180 04 B2180 1F	--
Passenger heated seat back temperature sensor low reference	--	B2180 04 B2180 1F	--	--
Passenger heated seat cushion element supply voltage	B2508 02	B2430 0C	B2345 00 B2508 01	B2430 0B
Passenger heated seat cushion element control	B2345 00 B2508 02	B2430 0C	B2345 00 B2508 01	B2430 0B
Passenger heated seat cushion temperature sensor signal	B2170 02 B2430 1F	B2430 04 B2430 1F	B2430 04 B2430 1F	B2430 0A
Passenger heated seat cushion temperature sensor low reference	--	B2430 04 B2430 1F	--	--

Circuit/System Description

The driver and passenger heated seat heating elements are controlled by a common high current relay internal to the memory seat module (MSM) and the low side by individual element control circuits. The MSM connects the heated seat heater element supply voltage circuits for both seats to a common reference point. This reference point is biased to approximately 2.0 volts. Before the memory seat module will allow heated seat operation, it checks to see if this reference voltage is shorted to ground or battery voltage. Once the module

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verifies that it is not closing to a shorted heating element, it allows for heated seat operation. After which it continues to monitor for a shorted circuit.

Conditions for Running the DTC

The memory seat module (MSM) must be powered.

Conditions for Setting the DTC

B2345 00

After the heated seat is activated, the MSM detects a shorted circuit on the seat heating element supply voltage circuit or control circuit.

B2345 13

Any temperature sensor input that remains below 1.5 volts for more than 1 second.

B2345 42

This DTC will set if the module calibration is not programmed.

B2345 4B

This DTC will set if the module calibration is out of range.

Action Taken When the DTC Sets

The heated seat function for both seats will be disabled.

Conditions for Clearing the DTC

- The current DTC will clear and set the code to history 3 seconds after the reference voltage returns to the normal operating range and the ignition is cycled OFF then back to ACC or RUN.
- The history DTC will clear after 50 consecutive fault-free ignition cycles have occurred.

Reference Information

Schematic Reference

- Driver Seat Schematics
- Passenger Seat Schematics

Connector End View Reference

Power Seat Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing**B2345 00**

1. Ignition OFF, disconnect the (C1, C4) harness connectors at the MSM.
2. Test for infinite resistance between the driver seat heating element supply voltage circuit terminal 14 (C1) and ground.
 - If less than the specified range, test the supply voltage circuit and the seat cushion and seat back heating element control circuits for a short to ground.
3. Ignition ON, verify that a test lamp does not illuminate between the supply voltage circuit terminal 14 (C1) and ground.
 - If the test lamp illuminates, test the supply voltage circuit and the seat cushion and seat back heating element control circuits for a short to voltage.
4. Test for infinite resistance between the passenger seat heating element supply voltage circuit terminal 6 (C1) and ground.
 - If less than the specified range, test the supply voltage circuit and the seat cushion and seat back heating element control circuits for a short to ground.
5. Ignition ON, verify that a test lamp does not illuminate between the supply voltage circuit terminal 6 (C1) and ground.
 - If the test lamp illuminates, test the supply voltage circuit and the seat cushion and seat back heating element control circuits for a short to voltage.
6. If all circuits test normal, replace the memory seat module.

B2345 13

1. Ignition OFF, disconnect the (C2, C4) harness connectors at the memory seat module.
2. Test for greater than 2.2K ohms of resistance between the following seat cushion temperature sensor signal circuits and the low reference circuits:
 - Driver seat cushion terminal 1 (C5) and terminal 3 (C2)

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- Passenger seat cushion terminal 2 (C5) and terminal 6 (C2)
 - If less than the specified value, test for a short between the signal and low reference circuits. If the circuits test normal, replace the appropriate temperature sensor.
- 3. Test for greater than 1.7K ohms of resistance between the following seat back temperature sensor signal circuits and the low reference circuits:
 - Driver seat back terminal 4 (C5) and terminal 2 (C2)
 - Passenger seat back terminal 3 (C5) and terminal 5 (C2)
 - If less than the specified value, test for a short between the signal and low reference circuits. If the circuits test normal, replace the appropriate temperature sensor.
- 4. If all circuits test normal, replace the memory seat module.

B2345 42 or B2345 4B

If either DTC is set, the only option is module replacement.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Driver Seat Back Cushion Heater and Passenger Seat Back Cushion Heater Replacement**
- **Driver Seat Cushion Heater and Passenger Seat Cushion Heater Replacement**
- **Control Module References** for the memory seat module replacement, setup and programming

DTC B2425 OR B2430

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC B2425 04

Left Seat Heater Cushion Circuit Open

DTC B2425 0A

Left Seat Heater Cushion Circuit Rate of Change Below Threshold

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DTC B2425 0B

Left Seat Heater Cushion Circuit Current Above Threshold

DTC B2425 0C

Left Seat Heater Cushion Circuit Current Below Threshold

DTC B2425 1F

Left Seat Heater Cushion Circuit Intermittent

DTC B2430 04

Right Seat Heater Cushion Circuit Open

DTC B2430 0A

Right Seat Heater Cushion Circuit Rate of Change Below Threshold

DTC B2430 0B

Right Seat Heater Cushion Circuit Current Above Threshold

DTC B2430 0C

Right Seat Heater Cushion Circuit Current Below Threshold

DTC B2430 1F

Right Seat Heater Cushion Circuit Intermittent

Diagnostic Fault Information**DTC B2425 or B2430**

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver heated seat back element supply voltage	B2508 02	B1935 0C	B2345 00 B2508 01	B1935 0B
Driver heated seat back element control	B2345 00 B2508 02	B1935 0C	B2345 00 B2508 01	B1935 0B
Driver heated seat back temperature sensor signal	B2435 02	B1935 04 B1935 1F	B1935 04 B1935 1F	B1935 0A
Driver heated seat back		B1935 04		

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temperature sensor low reference	-	B1935 1F	-	-
Driver heated seat cushion element supply voltage	B2508 02	B2425 0C	B2345 00 B2508 01	B2425 0B
Driver heated seat cushion element control	B2345 00 B2508 02	B2425 0C	B2345 00 B2508 01	B2425 0B
Driver heated seat cushion temperature sensor signal	B1925 02 B2425 1F	B2425 04 B2425 1F	B2425 04 B2425 1F	B2425 0A
Driver heated seat cushion temperature sensor low reference	-	B2425 04 B2425 1F	-	-
Passenger heated seat back element supply voltage	B2508 02	B2180 0C	B2345 00 B2508 01	B2180 0B
Passenger heated seat back element control	B2345 00 B2508 02	B2180 0C	B2345 00 B2508 01	B2180 0B
Passenger heated seat back temperature sensor signal	B2440 02	B2180 04 B2180 1F	B2180 04 B2180 1F	B2180 0A
Passenger heated seat back temperature sensor low reference	-	B2180 04 B2180 1F	-	-
Passenger heated seat cushion element supply voltage	B2508 02	B2430 0C	B2345 00 B2508 01	B2430 0B
Passenger heated seat cushion element control	B2345 00 B2508 02	B2430 0C	B2345 00 B2508 01	B2430 0B
Passenger heated seat cushion temperature sensor signal	B2170 02 B2430 1F	B2430 04 B2430 1F	B2430 04 B2430 1F	B2430 0A
Passenger heated seat cushion temperature sensor low reference	-	B2430 04 B2430 1F	-	-

Circuit/System Description

The left and right heated seats are controlled by the memory seat module (MSM). When the heated seat is active, power is applied to the seat cushion and back heater elements through a common voltage supply circuit. Each individual heater element is grounded by the MSM through separate low side drive control circuits. The heater element control circuits are pulse width modulated to ground by the module in order to control the seat temperature by regulating the current flow through the heater elements. The module then monitors the current flow through the heating elements and the rate of change of the temperature sensors to verify correct heated seat operation.

Conditions for Running the DTC

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The memory seat module must be powered.

Conditions for Setting the DTC

B2425 04, B2430 04

The module does not detect a temperature change for up to 210 seconds.

B2425 0A, B2430 0A

The module detects that the set point temperature has not been reached for up to 8.5 minutes.

B2425 0B, B2430 0B

By measuring the current and voltage output to the seat cushion heating element every 10 seconds, the memory seat module calculates that the heating element resistance is below the minimum resistance value of 2.0 ohms.

B2425 0C, B2430 0C

By measuring the current and voltage output to the seat cushion heating element every 10 seconds, the memory seat module calculates that the heating element resistance is above the maximum resistance value of 6.5 ohms.

B2425 1F, B2430 1F

The temperature sensor voltage is erratic or change suddenly.

Action Taken When the DTC Sets

The heated seat function for the affected seat will be disabled.

Conditions for Clearing the DTC

- The current DTC will clear and set the code to history, when the malfunction is no longer present and the power mode changes to OFF then back to ACC or RUN.
- The history DTC will clear after 50 consecutive fault-free ignition cycles have occurred.

Reference Information

Schematic Reference

- **Driver Seat Schematics**
- **Passenger Seat Schematics**

Connector End View Reference

Power Seat Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing**B2425 Driver Seat Cushion**

1. Ignition OFF, disconnect the (C1) harness connector at the memory seat module.
2. Test for less than 6.5 ohms of resistance between the seat cushion heater element supply voltage circuit terminal 14 and the control circuit terminal 11.
 - If greater than the specified value, test the supply voltage circuit and the control circuit for an open/high resistance. If the circuits test normal, replace the seat cushion heating element.
3. Ignition OFF, disconnect the (C2, C5) harness connectors at the memory seat module.
4. Test for 2.2K-300K ohms of resistance between the seat cushion temperature sensor signal circuit terminal 1 (C5) and the low reference circuit terminal 3 (C2).
 - If greater than the specified range, test the signal circuit and the low reference circuit for a short to voltage or an open/high resistance. If the circuits test normal, replace the seat cushion temperature sensor.
 - If less than the specified range, test for a short between the signal and low reference circuits. If the circuits test normal, replace the seat cushion temperature sensor.
5. Ignition OFF, connect the (C1, C2, C5) harness connectors at the memory seat module.
6. Disconnect the harness connector at the seat cushion heating element/temperature sensor.
7. Ignition ON, test for 4.8-5.2 volts between the temperature sensor signal circuit terminal C and ground.
 - If greater than the specified range, test the signal circuit for a short to voltage. If the circuit tests normal, replace the memory seat module.
 - If less than the specified range, test the signal circuit for a short to ground. If the circuit tests normal, replace the memory seat module.
8. If all circuits test normal, replace the memory seat module.

B2430 Passenger Seat Cushion

1. Ignition OFF, disconnect the (C1, C4) harness connectors at the memory seat module.
2. Test for less than 6.5 ohms of resistance between the seat cushion heater element supply voltage circuit terminal 6 (C1) and the control circuit terminal 14 (C4).
 - If greater than the specified range, test the supply voltage circuit and the control circuit for an open/high resistance. If the circuits test normal, replace the seat cushion heating element.
3. Ignition OFF, disconnect the (C2, C5) harness connectors at the memory seat module.
4. Test for 2.2K-300K ohms of resistance between the seat cushion temperature sensor signal circuit terminal 2 (C5) and the low reference circuit terminal 6 (C2).
 - If greater than the specified range, test the signal circuit and low reference circuit for a short to voltage or an open/high resistance. If the circuits test normal, replace the seat cushion temperature sensor.
 - If less than the specified range, test for a short between the signal and low reference circuits. If the circuits test normal, replace the seat cushion temperature sensor.
5. Ignition OFF, connect the (C1, C2, C4, C5) harness connectors at the memory seat module.
6. Disconnect the harness connector at the seat cushion heating element/temperature sensor.
7. Ignition ON, test for 4.8-5.2 volts between the temperature sensor signal circuit terminal C and ground.
 - If greater than the specified range, test the signal circuit for a short to voltage. If the circuit tests normal, replace the memory seat module.
 - If less than the specified range, test the signal circuit for a short to ground. If the circuit tests normal, replace the memory seat module.
8. If all circuits test normal, replace the memory seat module.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Driver Seat Cushion Heater and Passenger Seat Cushion Heater Replacement**
- **Control Module References** for the memory seat module replacement, setup and programming.

DTC B2435 OR B2440**Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

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- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors**DTC B2435 02**

Left Seat Back Heater Sensor Circuit Shorted to Ground

DTC B2440 02

Right Seat Back Heater Sensor Circuit Shorted to Ground

Diagnostic Fault Information**DTC B2435 or B2440**

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver heated seat back element supply voltage	B2508 02	B1935 0C	B2345 00 B2508 01	B1935 0B
Driver heated seat back element control	B2345 00 B2508 02	B1935 0C	B2345 00 B2508 01	B1935 0B
Driver heated seat back temperature sensor signal	B2435 02	B1935 04 B1935 1F	B1935 04 B1935 1F	B1935 0A
Driver heated seat back temperature sensor low reference	-	B1935 04 B1935 1F	-	-
Driver heated seat cushion element supply voltage	B2508 02	B2425 0C	B2345 00 B2508 01	B2425 0B
Driver heated seat cushion element control	B2345 00 B2508 02	B2425 0C	B2345 00 B2508 01	B2425 0B
Driver heated seat cushion temperature sensor signal	B1925 02 B2425 1F	B2425 04 B2425 1F	B2425 04 B2425 1F	B2425 0A
Driver heated seat cushion temperature sensor low reference	-	B2425 04 B2425 1F	-	-
Passenger heated seat back element supply voltage	B2508 02	B2180 0C	B2345 00 B2508 01	B2180 0B
Passenger heated seat back element control	B2345 00 B2508 02	B2180 0C	B2345 00 B2508 01	B2180 0B
Passenger heated seat back temperature sensor signal	B2440 02	B2180 04 B2180 1F	B2180 04 B2180 1F	B2180 0A

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Passenger heated seat back temperature sensor low reference	-	B2180 04 B2180 1F	-	-
Passenger heated seat cushion element supply voltage	B2508 02	B2430 0C	B2345 00 B2508 01	B2430 0B
Passenger heated seat cushion element control	B2345 00 B2508 02	B2430 0C	B2345 00 B2508 01	B2430 0B
Passenger heated seat cushion temperature sensor signal	B2170 02 B2430 1F	B2430 04 B2430 1F	B2430 04 B2430 1F	B2430 0A
Passenger heated seat cushion temperature sensor low reference	-	B2430 04 B2430 1F	-	-

Circuit/System Description

The heated seat temperature sensor that set this diagnostic trouble code (DTC) is located in seat back just under the seat cover with the seat heating element. The memory seat module (MSM) supplies a separate 5-volt reference voltage through the temperature sensor signal circuit and a ground through the low reference circuit to the sensor. The module monitors the voltage of the sensor signal circuits to determine the temperature of the seat. The temperature sensor varies in resistance based on the temperature of the heating element, causing the signal voltage to change. Once the seat reaches the set temperature, the module will then cycle the control circuits of the heating elements ON and OFF in order to maintain the desired seat temperature based on the feedback voltage from the sensors.

Conditions for Running the DTC

The heated seat system must be active.

Conditions for Setting the DTC

The temperature sensor voltage drops below 0.80 volts for more than 1 second.

Action Taken When the DTC Sets

The heated seat function for the affected seat will be disabled.

Conditions for Clearing the DTC

- The current DTC will clear and set the code to history, 3 seconds after the reference voltage returns to the normal operating range and the ignition is cycled OFF then back to ACC or RUN.
- The history DTC will clear after 50 consecutive fault-free ignition cycles have occurred.

Reference Information

Schematic Reference

- **Driver Seat Schematics**
- **Passenger Seat Schematics**

Connector End View Reference**Power Seat Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing**DTC B2435 Driver Seat Back Temperature Sensor**

1. Ignition OFF, disconnect the (C2, C5) harness connectors at the memory seat module.
2. Test for infinite resistance between the seat back temperature sensor signal circuit terminal 4 (C5) and ground.
 - If less than the specified range, test the signal circuit for a short to ground.
3. Test for 1.7K-300K ohms of resistance between the signal circuit terminal 4 (C5) and the low reference circuit terminal 2 (C2).
 - If greater than the specified range, test the signal circuit and low reference circuit for a short to voltage or an open/high resistance. If the circuits test normal, replace the seat back temperature sensor.
 - If less than the specified range, test for a short between the signal and low reference circuits. If the circuits test normal, replace the seat back temperature sensor.
4. If all circuits test normal, replace the memory seat module.

DTC B2440 Passenger Seat Back Temperature Sensor

1. Ignition OFF, disconnect the (C2, C5) harness connectors at the memory seat module.
2. Test for infinite resistance between the seat back temperature sensor signal circuit

terminal 3 (C5) and ground.

- If less than the specified range, test the signal circuit for a short to ground.
- 3. Test for 1.7K-300K ohms of resistance between the signal circuit terminal 3 (C5) and the low reference circuit terminal 5 (C2).
 - If greater than the specified range, test the signal circuit and low reference circuit for a short to voltage or an open/high resistance. If the circuits test normal, replace the seat back temperature sensor.
 - If less than the specified range, test for a short between the signal and low reference circuits. If the circuits test normal, replace the seat back temperature sensor.
- 4. If all circuits test normal, replace the memory seat module.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Driver Seat Back Cushion Heater and Passenger Seat Back Cushion Heater Replacement**
- **Control Module References** for the memory seat module replacement, setup and programming.

DTC B2508 OR B2509

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC B2508 01

Seat Heater Relay Circuit Short to Battery

DTC B2508 02

Seat Heater Relay Circuit Short to Ground

Diagnostic Fault Information

DTC B2508 or B2509

	Short to	Open/High	Short to	Signal
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Circuit	Ground	Resistance	Voltage	Performance
Driver heated seat back element supply voltage	B2508 02	B1935 0C	B2345 00 B2508 01	B1935 0B
Driver heated seat back element control	B2345 00 B2508 02	B1935 0C	B2345 00 B2508 01	B1935 0B
Driver heated seat back temperature sensor signal	B2435 02	B1935 04 B1935 1F	B1935 04 B1935 1F	B1935 0A
Driver heated seat back temperature sensor low reference	-	B1935 04 B1935 1F	-	-
Driver heated seat cushion element supply voltage	B2508 02	B2425 0C	B2345 00 B2508 01	B2425 0B
Driver heated seat cushion element control	B2345 00 B2508 02	B2425 0C	B2345 00 B2508 01	B2425 0B
Driver heated seat cushion temperature sensor signal	B1925 02 B2425 1F	B2425 04 B2425 1F	B2425 04 B2425 1F	B2425 0A
Driver heated seat cushion temperature sensor low reference	-	B2425 04 B2425 1F	-	-
Passenger heated seat back element supply voltage	B2508 02	B2180 0C	B2345 00 B2508 01	B2180 0B
Passenger heated seat back element control	B2345 00 B2508 02	B2180 0C	B2345 00 B2508 01	B2180 0B
Passenger heated seat back temperature sensor signal	B2440 02	B2180 04 B2180 1F	B2180 04 B2180 1F	B2180 0A
Passenger heated seat back temperature sensor low reference	-	B2180 04 B2180 1F	-	-
Passenger heated seat cushion element supply voltage	B2508 02	B2430 0C	B2345 00 B2508 01	B2430 0B
Passenger heated seat cushion element control	B2345 00 B2508 02	B2430 0C	B2345 00 B2508 01	B2430 0B
Passenger heated seat cushion temperature sensor signal	B2170 02 B2430 1F	B2430 04 B2430 1F	B2430 04 B2430 1F	B2430 0A
Passenger heated seat cushion temperature sensor low reference	-	B2430 04 B2430 1F	-	-

Circuit/System Description

The driver and passenger heated seat heating elements are controlled by a common high

current relay internal to the memory seat module (MSM) and the low side by individual element control circuits. The MSM connects the heated seat heater element supply voltage circuits for both seats to a common reference point. This reference point is biased to approximately 2.0 volts. Before the memory seat module will allow heated seat operation, it checks to see if this reference voltage is shorted to ground or battery voltage. Once the module verifies that it is not closing to a shorted heating element, it allows heated seat operation. After which it continues to monitor for a shorted circuit.

Conditions for Running the DTC

The memory seat module must be powered.

Conditions for Setting the DTC**B2508 01**

Before the heated seats are activated, the memory seat module detects a short to battery voltage on the seat heating element supply voltage circuit or control circuit.

B2508 02

Before the heated seats are activated, the memory seat module detects a short to ground on the seat heating element supply voltage circuit or control circuit.

Action Taken When the DTC Sets

The heated seat function for both the driver and passenger seats will be disabled.

Conditions for Clearing the DTC

- The current DTC will clear set the code to history, 3 seconds after the reference voltage returns to normal operating range and the ignition is cycled OFF then back to ACC or RUN.
- The history DTC will clear after 50 consecutive fault-free ignition cycles have occurred.

Reference Information**Schematic Reference**

- **Driver Seat Schematics**
- **Passenger Seat Schematics**

Connector End View Reference**Power Seat Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing

1. Ignition OFF, disconnect the (C1, C4) harness connectors at the memory seat module.
2. Test for infinite resistance between the driver seat heating element supply circuit terminal 14 (C1) and ground.
 - If less than the specified range, test the seat back and cushion heating element supply voltage circuits and control circuits for a short to ground.
3. Ignition ON, verify that a test lamp does not illuminate between the supply voltage circuit terminal 14 (C1) and ground.
 - If the test lamp illuminates, test the seat back and cushion heating element supply voltage circuits and control circuits for a short to voltage.
4. Test for infinite resistance between the passenger seat heating element supply voltage circuit terminal 6 (C1) and ground.
 - If less than the specified range, test the seat cushion and seat back heating element supply voltage circuits and control circuits for a short to ground.
5. Ignition ON, verify that a test lamp does not illuminate between the supply voltage circuit terminal 6 (C1) and ground.
 - If the test lamp illuminates, test the seat cushion and seat back heating element supply voltage circuits and element control circuits for a short to voltage.
6. If all circuits test normal, replace the memory seat module.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Driver Seat Back Cushion Heater and Passenger Seat Back Cushion Heater Replacement**
- **Driver Seat Cushion Heater and Passenger Seat Cushion Heater Replacement**
- **Control Module References** for the memory seat module replacement, programming and setup

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DTC B3920 OR B3921**DTC Descriptors****DTC B3920 01**

Group 1 Seat Motors Common Circuit Shorted to Battery

DTC B3920 02

Group 1 Seat Motors Common Circuit Shorted to Ground

Diagnostic Fault InformationPerform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure**DTC B3920 or B3921**

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Seat Front Vertical Motor Down Control	B3920 02	1	B3920 01	B2355 5A
Driver Seat Front Vertical Motor Up Control	B3920 02	1	B3920 01	B2355 5A
Driver Seat Rear Vertical Motor Down Control	B3920 02	1	B3920 01	B2365 5A
Driver Seat Rear Vertical Motor Up Control	B3920 02	1	B3920 01	B2365 5A
Driver Seat Horizontal Motor Forward Control	B3920 02	1	B3920 01	B2375 5A
Driver Seat Horizontal Motor Rearward Control	B3920 02	1	B3920 01	B2375 5A
Driver Seat Recline Motor Forward Control	B3920 02	1	B3920 01	B1825 5A
Driver Seat Recline Motor Rearward Control	B3920 02	1	B3920 01	B1825 5A
Driver Seat Lumbar Motor Down Control	B3920 02	2	B3920 01	B1860 5A
Driver Seat Lumbar Motor Up Control	B3920 02	2	B3920 01	B1860 5A
Driver Seat Lumbar Motor Forward Control	B3920 02	2	B3920 01	B1850 5A
Driver Seat Lumbar Motor Rearward Control	B3920 02	2	B3920 01	B1850 5A

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1. Power seat inoperative
2. Lumbar inoperative

Circuit/System Description

The memory seat module (MSM) controls the seat, recline and lumbar motors via half bridges that are connected to a power rail internal to the module. Power rail 1 includes of the following motors:

- Seat front vertical motor
- Seat rear vertical motor
- Seat horizontal motor
- Seat recline motor
- Seat lumbar horizontal motor
- Seat lumbar vertical motor

The MSM connects all of the motor control circuits on the power rail to a common reference point whenever they are not in operation. This reference point is biased to approximately 2.5 volts. The MSM checks to see if this reference voltage is shorted to ground or battery before enabling any seat, recline or lumbar motor.

Conditions for Running the DTC

B3920

All motor outputs for power rail 1 must be inactive for this DTC to set.

Conditions for Setting the DTC

B3920 01

The voltage on any power rail 1 motor control circuit exceeds 2.78 volts for 100 ms.

B3920 02

The voltage on any power rail 1 motor control circuit is below 1.47 volts for 100 ms.

Action Taken When the DTC Sets

The MSM will not allow operation of any motor on the power rail for which the DTC was set.

Conditions for Clearing the DTC

- The current DTC clears and will set to history, when the voltage is between 1.47 volts and 2.5 volts for 3 seconds and the ignition is cycled OFF then back to ACC or RUN.

- The history DTC will clear after 50 consecutive fault-free ignition cycles have occurred.

Reference Information**Schematic Reference**

- **Driver Seat Schematics**
- **Passenger Seat Schematics**

Connector End View Reference**Power Seat Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing

1. Ignition OFF, disconnect the (C1) harness connector at the MSM.
2. Ignition ON, verify that a test lamp does not illuminate between any of the following motor control circuits and ground:
 - Front vertical motor terminal 12
 - Front vertical motor terminal 13
 - Rear vertical motor terminal 15
 - Rear vertical motor terminal 16
 - Seat horizontal motor terminal 9
 - Seat horizontal motor terminal 10
 - If the test lamp illuminates, test the control circuit for a short to voltage.
3. Test for infinite resistance between the following motor control circuits and ground:
 - Front vertical motor terminal 12
 - Front vertical motor terminal 13

- Rear vertical motor terminal 15
 - Rear vertical motor terminal 16
 - Seat horizontal motor terminal 9
 - Seat horizontal motor terminal 10
 - If less than infinite resistance, test the motor control circuit for a short to ground.
4. Test for greater resistance values than specified between the following motor control circuits:
- 1 ohm between the front vertical motor terminal 12 and terminal 13
 - 1 ohm between the rear vertical motor terminal 15 and terminal 16
 - 1 ohm between the seat horizontal motor terminal 9 and terminal 10
 - If less than the specified resistance, test the control circuits for a short together or a shorted motor.
5. Ignition OFF, disconnect the (C4) harness connector at the MSM.
6. Ignition ON, verify that a test does not illuminate between any of the following motor control circuits and ground:
- Lumbar vertical motor terminal 1
 - Lumbar vertical motor terminal 2
 - Lumbar horizontal motor terminal 12
 - Lumbar horizontal motor terminal 13
 - Seat recline motor terminal 15
 - Seat recline motor terminal 16
 - If the test lamp illuminates, test the control circuit for a short to voltage.
7. Test for infinite resistance between the following motor control circuits and ground:
- Lumbar vertical motor terminal 1
 - Lumbar vertical motor terminal 2
 - Lumbar horizontal motor terminal 12
 - Lumbar horizontal motor terminal 13
 - Seat recline motor terminal 15
 - Seat recline motor terminal 16
 - If less than infinite resistance, test the motor control circuit for a short to ground.
8. Test for greater resistance values than specified between the following motor control circuits:
- 8 ohms between the lumbar vertical motor terminal 1 and terminal 2
 - 4 ohms between the lumbar horizontal motor terminal 12 and terminal 13
 - 2 ohms between the recline motor terminal 15 and terminal 16
 - If less than the specified resistance, test the control circuits for a short together or a

shorted motor.

9. If all circuits test normal, replace the memory seat module.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Front Seat Adjuster Replacement**
- **Front Seat Recliner Actuator Motor Replacement**
- **Front Seat Lumbar Support Replacement (w/AL2)** or **Front Seat Lumbar Support Replacement (w/AM3)**
- **Control Module References** for MSM replacement, programming and setup

SYMPTOMS - SEATS

IMPORTANT: The following steps must be completed before using the symptom tables.

1. Perform the **Diagnostic System Check - Vehicle** before using the symptom tables in order to verify that all of the following are true:
 - There are no DTCs set.
 - The control modules can communicate via the serial data link.
2. Refer to the system description and operation from the following list in order to familiarize yourself with the system functions:
 - **Power Seats System Description and Operation**
 - **Lumbar Support Description and Operation (w/o Memory-A45)****Lumbar Support Description and Operation (with Memory-A45)**
 - **Heated/Cooled Seats Description and Operation**
 - **Heated Seats Description and Operation**
 - **Memory Seats Description and Operation**

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the power seats. Refer to **Checking Aftermarket Accessories** .
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.
- Inspect the seat adjuster track for conditions which may cause binding or objects within the seat adjustment range which obstruct movement or interfere with wiring.

Intermittent

Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to **Testing for Intermittent Conditions and Poor Connections** .

Symptom List

Refer to a symptom diagnostic procedure from the following list in order to diagnose the symptom:

- **Power Seat Inoperative (w/o Memory-A45)** or **Power Seat Inoperative (with Memory-A45)**
- **Lumbar Support Inoperative (w/o Memory-A45)** or **Lumbar Support Inoperative (with Memory-A45)**
- **Heated Seat Inoperative**
- **Heated/Cooled Seats Inoperative**
- **Heated/Cooled Seat Switch Indicator Malfunction**
- **Heated/Cooled Seat Always On**
- **Memory Seat Feature Inoperative**

POWER SEAT INOPERATIVE (W/O MEMORY-A45)**Circuit/System Description**

Power seat without memory is completely controlled through the seat adjuster switch. Battery voltage is supplied at all times to the seat adjuster switch from the memory seat module MSM/RT FRT PWR SEAT 25A circuit breaker that is located in the rear fuse block. When the seat adjuster switches are in an inactive state, the switch contacts are closed to the switch ground circuit.

All seat motors are reversible. For example, when the seat horizontal forward switch is pressed to move the entire seat forward, battery voltage is applied through the switch contacts and the seat horizontal motor forward control circuit to the motor. The motor is grounded through the horizontal motor rearward switch contacts and the horizontal motor rearward control circuit to the motor. The motor runs in order to drive the entire seat forward until the switch is released. Moving the entire seat rearward works similarly to moving the entire seat forward, except that battery positive voltage and ground are applied on opposite circuits causing the motor to run in the opposite direction. All seat motors are powered this way.

Reference Information**Schematic Reference****Passenger Seat Schematics****Connector End View Reference**

Power Seat Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Circuit/System Testing

1. Disconnect the harness connector at the seat adjuster switch.
2. Test for less than 1 ohm of resistance between the ground circuit terminal B and ground.
 - If greater than 1 ohm, test the ground circuit for an open/high resistance.
3. Verify that a test lamp illuminates between the B+ circuit terminal and ground.
 - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance.
4. Connect the harness connector at the seat adjuster switch.
5. Disconnect the harness connector at the appropriate seat motor assembly.
6. Connect a test lamp between the motor control circuit terminals for the inoperative motor.
7. Verify that the test lamp illuminates while pressing the appropriate seat switch in both directions.
 - If the test lamp does not illuminate for both directions, test the motor circuits for a short to ground or an open/high resistance. If the circuits test normal replace the seat adjuster switch.
8. If the circuits test normal replace the inoperative motor assembly.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Power Seat Switch Replacement**
- **Front Seat Adjuster Replacement**
- **Front Seat Recliner Actuator Motor Replacement**

POWER SEAT INOPERATIVE (WITH MEMORY-A45)

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

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Power Seat Inoperative (with Memory-A45)

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
B+ (C3 Terminal 5)	1	1	-	-
B+ (C3 Terminal 6)	2	2	-	-
B+ (C3 Terminal 3)	2	1	-	-
Front Vertical Up Switch Signal	2	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Front Vertical Down Switch Signal	2	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Rear Vertical Up Switch Signal	2	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Rear Vertical Down Switch Signal	2	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Horizontal Forward			B1735 01, B1740 01, B1745 01, B1750 01,	

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Switch Signal	2	1	B1755 01, B1760 01, B1815 01, B1820 01	-
Horizontal Rearward Switch Signal	2	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Recline Forward Switch Signal	2	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Recline Rearward Switch Signal	2	1	B1735 01, B1740 01, B1745 01, B1750 01, B1755 01, B1760 01, B1815 01, B1820 01	-
Driver Seat Front Vertical Motor Down Control	B3920 02	1	B3920 01	B2355 5A
Driver Seat Front Vertical Motor Up Control	B3920 02	1	B3920 01	B2355 5A
Driver Seat Rear Vertical Motor Down Control	B3920 02	1	B3920 01	B2365 5A
Driver Seat Rear Vertical Motor Up Control	B3920 02	1	B3920 01	B2365 5A
Driver Seat Horizontal Motor Forward Control	B3920 02	1	B3920 01	B2375 5A

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Driver Seat Horizontal Motor Rearward Control	B3920 02	1	B3920 01	B2375 5A
Driver Seat Recline Motor Forward Control	B3920 02	1	B3920 01	B1825 5A
Driver Seat Recline Motor Rearward Control	B3920 02	1	B3920 01	B1825 5A
Ground (C3 Terminal 1)	-	-	-	-
Ground (C3 Terminal 1)	-	-	-	-
Ground (Inline C315 Terminal 3)	-	2	-	-
1. Power seat and memory functions inoperative 2. Scan Tool Does Not Communicate with Low Speed GMLAN Device				

Circuit/System Description

A low current battery voltage is supplied at all times to the memory seat module (MSM) from the 10A MSM LOGIC fuse. This voltage is used by the MSM for logic power and to supply battery reference voltage to the seat and lumbar adjuster switches. Battery positive voltage is also supplied at all times to the MSM from the MSM/LT FRT PWR SEAT 25A circuit breaker. This voltage is connected to a power rail internal to the MSM and is used to drive the power seat motors, lumbar motors and seat heater elements on vehicles equipped with heated seats. Each seat and lumbar adjuster motor is controlled by the MSM through 2 motor control circuits. The MSM connects all motor control circuits on the power rail to a common reference point whenever they are not in operation. This reference point is biased to approximately 2.5 volts. The MSM checks to see if the reference voltage is shorted to ground or battery before enabling any of the seat or lumbar motors.

All motors are reversible. For example, when the seat switch is operated to move the entire seat forward, battery positive voltage is applied through the switch contacts and the power seat horizontal forward switch signal circuit to the MSM. In response to this signal, the MSM applies battery voltage through the driver seat horizontal motor forward control circuit and ground through the driver seat horizontal motor rearward control circuit to the motor. The motor runs to drive the entire seat forward until the switch is released. Moving the entire seat rearward works similarly to moving the entire seat forward, except that battery positive voltage and ground are applied on the opposite circuits causing the motor to run in the opposite direction.

Reference Information

Schematic Reference**Driver Seat Schematics****Connector End View Reference****Power Seat Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

1. Ignition ON, observe the scan tool Memory Seat Module seat switch parameters. Verify that none of the seat switch parameters are Active while the switch is in an inactive state.
 - If any of the switch parameters are Active, perform the Switch Circuit Test.
2. Observe the scan tool Memory Seat Module seat switch parameters while pressing and releasing the related seat switch. The reading should change between Inactive and Active.
 - If any of the switch parameters are not Active, perform the Switch Circuit Test.
3. If all switch inputs to the MSM function normal, perform the Motor Control Circuit Test.

Circuit/System Testing**Seat Adjuster Switch Circuit Test**

1. Ignition OFF, disconnect the harness connector at the seat adjuster switch.
2. Ignition ON, verify that a test lamp illuminates between the B+ circuit terminal E and ground.
 - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the memory seat module.
3. Install a 3A fused jumper wire between the inoperative switch signal circuit terminal and the B+ circuit terminal E. Verify the related scan tool seat switch parameter is Active.

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- If not Active, test the signal circuit for an open/high resistance. If the circuit tests normal, replace the MSM.
- 4. If all circuits test normal, test or replace the seat adjuster switch.

Motor Control Circuit Test

1. Disconnect the (C3) harness connector at the memory seat module.
2. Verify that a test lamp illuminates between the B+ circuit terminal 5 and ground.
 - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance.
3. Connect the (C3) harness connector at the memory seat module.
4. Disconnect the (C1) harness connector at the appropriate seat adjuster motor assembly or seat recline motor.
5. Connect a test lamp between the motor control circuit terminals of the inoperative motor.
6. Verify that a test lamp illuminates while pressing the seat switch in both directions.
 - If the test lamp does not illuminate for both directions, test the motor control circuits for an open/high resistance. If the circuits test normal replace the MSM.
7. If all circuits test normal, test or replace the inoperative seat motor.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Power Seat Switch Replacement**
- **Front Seat Adjuster Replacement**
- **Front Seat Recliner Actuator Motor Replacement**
- **Control Module References** for memory seat module replacement, setup and programming

MEMORY SEAT FEATURE INOPERATIVE

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

Memory Seat Feature Inoperative

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Heated and Cooled Seat Switch Ground	-	2	-	-
Heated Seat Back Only				

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Mode Indicator Control	4	4	4	-
Heated Seat Back Only Mode Switch Signal	3	3	3	-
Heated Seat Cool Indicator Control	4	4	4	-
Heated Seat Cool Switch Signal	2	2	2	-
Heated Seat Heat Indicator Control	4	4	4	-
Heated Seat High Temperature Indicator Control	4	4	4	-
Heated Seat Low Temperature Indicator Control	4	4	4	-
Heated Seat Medium Temperature Indicator Control	4	4	4	-
Memory Switch Signal	1	1	1	-
Memory Switch Supply Voltage	5	1	-	-
Heated Seat Temperature Switch Signal	2	2	2	-
1. Memory Seat Feature Inoperative 2. Heated/Cooled Seats Inoperative 3. Heated/Cooled Seat Inoperative - Back Only Mode 4. Heated/Cooled Seat Switch Indicator Malfunction				

Circuit/System Description

Battery positive voltage is supplied to the memory switch from the driver door module (DDM). When a memory switch is pressed, battery voltage is applied through the switch contacts, a series of resistors and thorough the memory switch signal circuit to the DDM. The door module then sends a message via the GMLAN serial data line to the memory seat module (MSM) indicating the memory recall request. The MSM then commands the appropriate seat motors to move to the pre-recorded seat positions stored in memory in response to the switch input.

Diagnostic Aids

The DDM is referenced in Tech 2 as the Driver Door Switch.

Reference Information

Schematic Reference

Driver Seat Schematics

Connector End View Reference

Power Seat Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

1. Verify that all manual power seat and lumbar functions operate as described in the description and operation. Refer to **Memory Seats Description and Operation**.
2. Verify that the memory recall personalization option is ON. Refer to **Personalization Description and Operation** and **Vehicle Personalization** .
3. Verify that memory positions for driver 1 and driver 2 have been recorded to memory, by observing the scan tool Driver Position Module, Memory Data 1 and Memory Data 2 parameters.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the heated/cooled seat switch.
2. Ignition ON, test for B+ between the memory seat switch supply voltage circuit terminal 1 and ground.
 - If less than B+, test the supply voltage circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the driver door module.
3. Test for 0 volts between the memory switch signal circuit terminal 9 and ground.
 - If greater than 0 volts, test the signal circuit for a short to voltage.

4. Ignition OFF, connect the harness connector at the heated/cooled seat switch.
5. Ignition ON, verify the scan tool Driver Door Switch, Memory Recall Switches parameter changes state while pressing the memory 1 switch.
 - If the parameter does not change state, test the memory switch signal circuit terminal 9 for a short to ground or an open/high resistance. If the circuit tests normal, perform the Memory Switch component test. If the switch tests normal, replace the driver door module.
6. Verify the scan tool Memory Recall Switches parameter changes state while pressing the memory 2 switch.
 - If the parameter does not change state, replace the heated/cooled seat switch.
7. Verify the scan tool Memory Recall Switches parameter changes state while pressing the EXIT switch.
 - If the parameter does not change state, replace the heated/cooled seat switch.
8. If all circuits test normal, replace the memory seat module.

Component Testing

Memory Switch

1. Disconnect the harness connector at the heated/cooled seat switch.
2. Test for infinite resistance between the memory switch signal circuit terminal 9 and the switch supply voltage circuit terminal 1.
 - If not infinite, replace the heated/cooled seat switch.
3. Test the resistance between terminal 1 and terminal 9 while pressing the memory 1, memory 2 and EXIT buttons. Compare the resistance readings to the values in the Memory Switch Values table below.
 - If the resistance is not within the specified range, replace the heated/cooled seat switch.

Memory Switch Values

Switch Position	Resistance
Idle	Infinite
Memory 1	2.03K-2.49K ohm
Memory 2	3.83K-4.69K ohm
EXIT	8.33K-10.18K ohm

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

• **Driver Seat Adjuster Memory Switch Replacement**

- **Control Module References** for memory seat module and driver door module replacement, programming and setup

LUMBAR SUPPORT INOPERATIVE (W/O MEMORY-A45)

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

Circuit/System Description

Power seat lumbar support without memory is completely controlled through the seat lumbar adjuster switch. Battery voltage is supplied at all times to the seat lumbar adjuster switch from the MSM/RT FRT PWR SEAT 25A circuit breaker that is located in the rear fuse block. When the seat adjuster switches are in an inactive state, the switch contacts are closed to the switch ground circuit.

Both lumbar motors are reversible. For example, when the lumbar horizontal forward switch is pressed to move the lumbar support forward, battery voltage is applied through the switch contacts and the lumbar motor forward control circuit to the motor. The motor is grounded through the lumbar motor rearward switch contacts and the lumbar motor rearward control circuit to the motor. The motor runs in order to drive the lumbar support forward toward the occupants back until the switch is released. Moving the lumbar support rearward works similarly to moving the lumbar support forward, except that battery positive voltage and ground are applied on opposite circuits causing the motor to run in the opposite direction. The lumbar support vertical motor is also powered this way.

Reference Information

Schematic Reference

Passenger Seat Schematics

Connector End View Reference

Power Seat Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Circuit/System Testing

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1. Disconnect the harness connector at the lumbar adjuster switch.
2. Test for less than 1 ohm of resistance between the ground circuit terminal E and ground.
 - o If greater than 1 ohm, test the ground circuit for an open/high resistance.
3. Verify that a test lamp illuminates between the B+ circuit terminal G and ground.
 - o If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance.
4. Connect the harness connector at the lumbar adjuster switch.
5. Disconnect the harness connector at the lumbar motor assembly.
6. Connect a test lamp across the motor control circuit terminals for the inoperative motor.
7. Verify that the test lamp illuminates while pressing the lumbar switch in both directions.
 - o If the test lamp does not illuminate for both directions, test the motor circuits for a short to ground or an open/high resistance. If the circuits test normal replace the lumbar adjuster switch.
8. If the circuits test normal replace the lumbar motor assembly.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Front Seat Lumbar Control Switch Replacement**
- **Front Seat Lumbar Support Replacement (w/AL2)** or **Front Seat Lumbar Support Replacement (w/AM3)**

LUMBAR SUPPORT INOPERATIVE (WITH MEMORY-A45)

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

Lumbar Support Inoperative (with Memory-A45)

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Lumbar Up Switch Signal	2	1	1	-
Lumbar Down Switch Signal	2	1	1	-
Lumbar Forward Switch Signal	2	1	1	-
Lumbar Rearward Switch Signal	2	1	1	-
Driver Seat Lumbar				

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Motor Down Control	B3920 02	1	B3920 01	B1860 5A
Driver Seat Lumbar Motor Up Control	B3920 02	1	B3920 01	B1860 5A
Driver Seat Lumbar Motor Forward Control	B3920 02	1	B3920 01	B1850 5A
Driver Seat Lumbar Motor Rearward Control	B3920 02	1	B3920 01	B1850 5A
1. Lumbar Support Inoperative with Memory-A45				
2. Scan Tool Does Not Communicate with Low Speed GMLAN Device				

Circuit/System Description

A low current battery voltage is supplied at all times to the memory seat module (MSM) from the 10A MSM LOGIC fuse. This voltage is used by the MSM for logic power and to supply battery reference voltage to the seat and lumbar adjuster switches. Battery positive voltage is also supplied at all times to the MSM from the MSM/LT FRT PWR SEAT 25A circuit breaker. This voltage is connected to a power rail internal to the MSM and is used to drive the power seat motors, lumbar motors and seat heater elements on vehicles equipped with heated seats. Each seat and lumbar adjuster motor is controlled by the MSM through 2 motor control circuits. The MSM connects all motor control circuits on the power rail to a common reference point whenever they are not in operation. This reference point is biased to approximately 2.5 volts. The MSM checks to see if the reference voltage is shorted to ground or battery before enabling any of the seat or lumbar motors.

All motors are reversible. For example, when the lumbar switch is operated to move the lumbar support forward, battery positive voltage is applied through the switch contacts and the lumbar horizontal forward switch signal circuit to the MSM. In response to this signal, the MSM applies battery voltage through the lumbar motor forward control circuit and ground through the lumbar motor rearward control circuit to the motor. The motor runs to drive the lumbar support forward toward the occupants back until the switch is released. Moving the lumbar support rearward works similarly to moving the lumbar support forward, except that battery positive voltage and ground are applied on the opposite circuits causing the motor to run in the opposite direction.

Reference Information**Schematic Reference**

- **Driver Seat Schematics**
- **Passenger Seat Schematics**

Connector End View Reference**Power Seat Connector End Views**

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

1. Ignition ON, observe the scan tool Memory Seat Module Lumbar Switch parameters while pressing the related lumbar switch. The reading should change between Inactive and Active.
2. Verify that none of the Lumbar Switch parameters are Active while the switch is in an inactive state.
 - If any of the switch parameters are Active, perform the Switch Circuit Test.
3. Verify that the Lumbar Switch parameters are Active while the switch is pressed.
 - If any of the switch parameters are not Active, perform the Switch Circuit Test.
4. If all lumbar switch inputs to the MSM function normal, perform the Motor Control Circuit Test.

Circuit/System Testing**Lumbar Adjuster Switch Circuit Test**

1. Ignition OFF, disconnect the harness connector at the lumbar adjuster switch.
2. Ignition ON, verify that a test lamp illuminates between the B+ circuit terminal G and ground.
 - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the MSM.
3. Verify that all scan tool lumbar switch input parameters are Inactive.
 - If not Inactive, test the appropriate signal circuit for a short to voltage. If the circuit tests normal, replace the memory seat module.
4. Install a 3A fused jumper wire between the inoperative switch signal circuit terminal and the B+ circuit terminal G. Verify the related scan tool Lumbar Switch parameter is Active.

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- If not Active, test the signal circuit for an open/high resistance. If the circuit tests normal, replace the MSM.
- 5. If all circuits test normal, test or replace the lumbar adjuster switch.

Motor Control Circuit Test

1. Disconnect the (C3) harness connector at the MSM.
2. Verify that a test lamp illuminates between the B+ circuit terminal 5 and ground.
 - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance.
3. Connect the (C3) harness connector at the MSM.
4. Disconnect the (C1) harness connector at the seat lumbar motor assembly.
5. Connect a test lamp between the motor control circuit terminals of the inoperative motor.
6. The test lamp should illuminate while pressing the switch in both directions.
 - If the test lamp does not illuminate, test the motor control circuits for an open/high resistance. If the circuits test normal replace the MSM.
7. If all circuits test normal, test or replace the lumbar motor.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Front Seat Lumbar Support Replacement (w/AL2)** or **Front Seat Lumbar Support Replacement (w/AM3)**
- **Front Seat Lumbar Control Switch Replacement**
- **Control Module References** for MSM replacement, setup and programming

HEATED/COOLED SEATS INOPERATIVE

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

Heated/Cooled Seats Inoperative

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Battery Positive Voltage	1	1	-	-
Ignition 3 Voltage	1	1	-	-
Driver/Passenger Seat Blower Supply Voltage	2	2	-	-
Left Heated/Cooled Seat	2	2	2	-

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Mode Signal				
Right Heated/Cooled Seat Mode Signal	2	2	2	-
Heated Seat Back Only Mode Switch Signal	5	5	5	-
Heated Seat Cool Switch Signal	4	4	4	-
Heated Seat Back Cushion Switch Signal	3	3	3	-
Seat Back Temperature Sensor Signal	2	2	2	-
Seat Cushion Temperature Sensor Signal	2	2	2	-
Seat Back Heated/Cool Ventilation Module Cool Control	1	2	-	-
Seat Back Heated/Cool Ventilation Module Heat Control	1	2	-	-
Seat Cushion Heated/Cool Ventilation Module Cool Control	1	2	-	-
Seat Cushion Heated/Cool Ventilation Module Heat Control	1	2	-	-
Seat Back Blower Speed Control	2	2	6	-
Seat Cushion Blower Speed Control	2	2	6	-
Heated Seat Switch Low Reference	-	2	-	-
Seat Blower Low Reference	-	2	-	-
Seat Back Temperature Sensor Low Reference	-	2	-	-
Seat Cushion Temperature Sensor Low Reference	-	2	-	-
Module Ground	-	1	-	-

1. Driver and passenger heated/cooled seats are inoperative
2. Seat heat and cool modes are inoperative
3. Seat heat mode is inoperative
4. Seat cool mode is inoperative
5. Heated/cooled seat inoperative - Back Only Mode
6. Heated/cooled seats temperature adjustment is inoperative

Circuit/System Description

The heat and cool seat functions for both driver and passenger seats are controlled by the climate control seat module that is located under the passenger seat cushion. When a driver or passenger heat or cool seat switch is pressed, a low reference signal is applied through the switch signal circuit to the door control module. In response to the switch input, the door module sends a GMLAN message to the memory seat module (MSM) indicating the heat/cool seat request. The MSM then sends a pulse width modulation (PWM) signal through the heated/cooled seat mode signal circuit to the climate control seat (CCS) module. The CCS module then applies battery positive voltage to the seat cushion and seat back thermal electronic devices (TEDs) and a pre-determined voltage to the blower motors. To determine seat temperature, the CCS module supplies a 5 volt signal and a low reference to the temperature sensors that are attached to each TED. The temperature sensors are variable resistors, their resistance changes as the temperature of the seat changes. Then based on the seat temperature, the CCS module controls the voltage level that it applies to the TEDs and blower motors.

Diagnostic Aids

- In order to perform valid tests when diagnosing the climate control seat CCS system, the ignition must be cycled OFF then ON between each test in order to reset the CCS module.
- A short to battery voltage on a temperature sensor signal circuit may open the sensor.

Reference Information**Schematic Reference**

- **Driver Seat Schematics**
- **Passenger Seat Schematics**

Connector End View Reference**Power Seat Connector End Views****Electrical Information Reference**

- **Circuit Testing**

- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing**Driver and Passenger Heated/Cool Seats are Inoperative**

1. Ignition OFF, disconnect the C1 harness connector at the CCS module.
2. Ignition OFF, test for less than 5 ohms of resistance between the ground circuit terminal M and ground.
 - If greater than 5 ohms, test the ground circuit for an open/high resistance.
3. Verify that a test lamp illuminates between the B+ circuit terminal E and ground.
 - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance.
4. Ignition OFF, disconnect the C2 harness connector at the CCS module.
5. Ignition ON, verify that a test lamp illuminates between the ignition circuit terminal 1 and ground.
 - If the test lamp does not illuminate, test the ignition circuit for a short to ground or an open/high resistance.
6. If all circuits test normal, replace the CCS module.

Driver Heated/Cooled Seat Inoperative

1. Ignition ON, observe the following scan tool parameters in the Driver Door Switch data list while pressing and releasing the related switch. The readings should change between Active and Inactive.
 - Seat Back Heat Mode Sw.
 - Seat Cool Mode Switch.
 - Seat Heat Mode Sw.
 - If not Active or always Active, perform the Heated and Cooled Seat Switch Component Test.
2. Ignition OFF, disconnect the (C1, C2, C3) harness connectors at the CCS module.
3. Connect a test lamp between the heated/cooled seat mode signal circuit terminal 14 (C3)

and battery voltage.

4. Ignition ON, press the HEAT or COOL switch through the high, medium and low positions to OFF. The test lamp should illuminate until the OFF position is reached.
 - If the test lamp does not illuminate, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the MSM.
 - If the test lamp is ON with the switch in the OFF position, test the signal circuit for a short to ground. If the circuit tests normal, replace the MSM.

IMPORTANT: If the resistance is measured with the seat still warm or cool, the resistance values will vary. At 68°F, (20°C) the nominal resistance value is 1200 ohms +/-5 percent. For hotter or colder ambient temperatures, refer to Heated/Cooled Seats Inoperative table below. The delta resistance values between the seat cushion and seat back temperature sensors should not be greater than 2000 ohms.

5. Test for 300 ohms - 18K ohms of resistance between the following temperature sensor signal and low reference circuits.
 - Connector C2 seat cushion temperature sensor signal circuit terminal 7 and low reference circuit terminal 8.
 - Connector C2 seat back temperature sensor signal circuit terminal 9 and low reference circuit terminal 10.
 - If the resistance is greater than the specified value, test the sensor signal circuit and low reference circuit for a short to voltage or an open/high resistance. If the circuits test normal, test or replace the appropriate ventilation heat and cool module.
 - If the resistance measures less than the specified value, test or replace the appropriate ventilation heat and cool module.

IMPORTANT: The test leads must be connected in the correct polarity, otherwise lower out of range values will appear. Use the Positive Lead for the COOL control circuit and the Negative Lead for the HEAT control circuit. If the resistance is measured with the seat still warm or cool, the resistance values will vary even if the system was powered up for just a few seconds. The TED must be allowed to stabilize to room temperature prior to a measurement. The following conditions will change the resistance to out of range values:

- The test leads are incorrectly connected.

- **Air blowing across the TED.**
- **Measuring the resistance at other than room temperature of 70°F (21°C).**
- **Holding the TED portion of the heated and cool ventilation module in your hand.**

In hotter or colder climates where room temperature conditions of 70°F (21°C) may be unattainable, resistance values may read above the specified range. Use a heat gun or a blower to warm or cool the TED while measuring the resistance. The resistance values should slowly lower toward the specified range.

6. Test for 0.9-10 ohms of resistance between the following heat control and cool control circuits.
 - Connector C1: Seat cushion heat control circuit terminal G and cool control circuit terminal H.
 - Connector C1: Seat back heat control circuit terminal J and cool control circuit terminal K.
 - If greater than 10 ohms, test the control circuits for an open/high resistance. If the circuits test normal, test or replace the appropriate ventilation heat and cool module.
 - If less than 0.9 ohm, test or replace the appropriate ventilation heat and cool module.
7. Test for infinite resistance between the following circuits and ground.
 - Connector C1:
 - Seat cushion heat control circuit terminal G
 - Seat cushion cool control circuit terminal H
 - Seat back heat control circuit terminal J
 - Seat back cool control circuit terminal K
 - Connector C2:
 - Seat cushion temperature sensor signal circuit terminal 7
 - Seat back temperature sensor signal circuit terminal 9
 - Connector C3:
 - Seat cushion blower motor speed control circuit terminal 11
 - Seat back blower motor speed control circuit terminal 12
 - Blower motor supply voltage circuit terminal 16

- If less than infinite, test the appropriate circuit for a short to ground.
- 8. Connect the (C1, C2, C3) harness connectors to the CCS module.
- 9. Disconnect the harness connector at the seat cushion ventilation heat and cool module.
- 10. Ignition OFF, test for less than 5 ohms of resistance between the blower motor low reference circuit terminal 4 and ground.
 - If greater than 5 ohms, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the CCS module.
- 11. Ignition ON, test for 4.8-5.2 volts between the temperature sensor signal circuit terminal 5 and ground.
 - If greater than 5.2 volts, test the signal circuit for a short to voltage. If the circuit tests normal, replace the CCS module.
 - If less than 4.8 volts, replace the CCS module.

IMPORTANT: The ignition must be cycled OFF then ON between each test in order to reset the CCS module.

- 12. Ignition ON, connect a test lamp between the following control circuits and ground. The test lamp should illuminate or slowly illuminate for approximately 2 to 4 seconds after the switch is pressed. On the heat control circuit, the test lamp may exhibit a 4 second delay before it starts to illuminate.

Press the HEAT switch for heat control and the COOL switch for cool control.

- Terminal 1 seat cushion heat control circuit
- Terminal 3 seat cushion cool control circuit
- If the test lamp does not illuminate, replace the climate control seat module.
- If the test lamp is always ON, test the appropriate control circuit for a short to voltage. If the circuit tests normal, replace the CCS module.

IMPORTANT: The ignition must be cycled OFF then ON between each test in order to reset the CCS module.

- 13. Connect a test lamp between the following circuits and ground. The test lamp should illuminate or slowly illuminate for approximately 5 seconds after pressing the HEAT switch.
 - Terminal 2 seat cushion blower motor supply voltage
 - Terminal 7 seat cushion blower motor speed control
 - If the test lamp does not illuminate, test the appropriate circuit for an open/high resistance. If the circuit tests normal, replace the CCS module.
 - If the test lamp is always ON, test the appropriate circuit for a short to voltage. If

the circuit tests normal, replace the CCS module.

14. Connect the harness connector to the seat cushion ventilation heat and cool module.
15. Disconnect the harness connector at the seat back ventilation heat and cool module.
16. Ignition OFF, test for less than 5 ohms of resistance between the blower motor low reference circuit terminal 4 and ground.
 - If greater than 5 ohms, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the climate control module.
17. Ignition ON, test for 4.8-5.2 volts between the temperature sensor signal circuit terminal 5 and ground.
 - If greater than 5.2 volts, test the signal circuit for a short to voltage. If the circuit tests normal, replace the CCS module.
 - If less than 4.8 volts, replace the CCS module.

IMPORTANT: The ignition must be cycled OFF then ON between each test in order to reset the CCS module.

18. Ignition ON, connect a test lamp between the following control circuits and ground. The test lamp should illuminate or slowly illuminate for approximately 4 seconds after the switch is pressed. On the heat control circuit, the test lamp may exhibit a 4 second delay before it starts to illuminate.

Press the HEAT switch for heat control and the COOL switch for cool control.

- Terminal 1 seat back heat control circuit
- Terminal 3 seat back cool control circuit
- If the test lamp does not illuminate, replace the CCS module.
- If the test lamp is always ON, test the appropriate control circuit for a short to voltage. If the circuit tests normal, replace the CCS module.

IMPORTANT: The ignition must be cycled OFF then ON between each test in order to reset the CCS module.

19. Connect a test lamp between the following circuits and ground. The test lamp should illuminate or slowly illuminate for approximately 5 seconds after pressing the HEAT switch.
 - Terminal 2 seat back blower motor supply voltage circuit
 - Terminal 7 seat back blower motor speed control circuit
 - If the test lamp does not illuminate, test the appropriate circuit for an open/high resistance. If the circuit tests normal, replace the CCS module.
 - If the test lamp is always ON, test the appropriate circuit for a short to voltage. If

the circuit tests normal, replace the CCS module.

20. If all circuits test normal, test or replace the appropriate ventilation heat and cool module.

Passenger Heated/Cooled Seat Inoperative

1. Ignition ON, observe the following scan tool parameters in the Passenger Door Switch data list while pressing and releasing the related switch. The readings should change between Active and Inactive.
 - Seat Back Heat Mode Sw.
 - Seat Cool Mode Switch
 - Seat Heat Mode Sw.
 - If not Active or always Active, perform the Heated and Cooled Seat Switch Component Test.
2. Ignition OFF, disconnect the (C1, C2, C3) harness connectors at the CCS module.
3. Connect a test lamp between the heated/cooled seat mode signal circuit terminal 6 (C3) and battery voltage.
4. Ignition ON, press the HEAT or COOL switch through the high, medium and low positions to OFF. The test lamp should illuminate until the OFF position is reached.
 - If the test lamp does not illuminate, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the MSM.
 - If the test lamp is ON with the switch in the OFF position, test the signal circuit for a short to ground. If the circuit tests normal, replace the MSM.

IMPORTANT: If the resistance is measured with the seat still warm or cool, the resistance values will vary. At 68°F (20°C), the nominal resistance value is 1200 ohms +/-5 percent. For hotter or colder ambient temperatures, refer to the Temperature vs Resistance in Heated/Cooled Seats Inoperative table below. The delta resistance values between the seat cushion and seat back temperature sensors should not be greater than 2000 ohms.

5. Test for 300 - 18K ohms of resistance between the following temperature sensor signal and low reference circuits. The resistance should measure near the specified value in the Temperature vs Resistance table below.
 - Connector C2 seat cushion temperature sensor signal circuit terminal 2 and low reference circuit terminal 3.
 - Connector C2 seat back temperature sensor signal circuit terminal 4 and low reference circuit terminal 5.

- If the resistance is greater than the specified value, test the sensor signal circuit and low reference circuit for a short to voltage or an open/high resistance. If the circuits test normal, test or replace the appropriate ventilation heat and cool module.
- If the resistance measures less than the specified value, test or replace the appropriate ventilation heat and cool module.

IMPORTANT: The test leads must be connected in the correct polarity, otherwise lower out of range values will appear. Use the Positive Lead for the COOL control circuit and the Negative Lead for the HEAT control circuit. If the resistance is measured with the seat still warm or cool, the resistance values will vary even if the system was powered up for just a few seconds. The TED must be allowed to stabilize to room temperature prior to a measurement. The following conditions will change the resistance to out of range values:

- The test leads are incorrectly connected
- Air blowing across the TED.
- Measuring the resistance at other than room temperature of 70°F (21°C).
- Holding the TED portion of the heated and cool ventilation module in your hand.

In hotter or colder climates where room temperature conditions of 70°F (21°C) may be unattainable, resistance values may read above the specified range. Use a heat gun or a blower to warm or cool the TED while measuring the resistance. The resistance values should slowly lower toward the specified range.

6. Test for 0.9-10 ohms of resistance between the following heat control and cool control circuits.
 - Connector C1 seat cushion heat control circuit terminal A and cool control circuit terminal B.
 - Connector C1 seat back heat control circuit terminal C and cool control circuit terminal D.
 - If greater than 10 ohms, test the control circuits for an open/high resistance. If the circuits test normal, test or replace the appropriate ventilation heat and cool module.

- If less than 0.9 ohms, test or replace the appropriate ventilation heat and cool module.
- 7. Test for infinite resistance between the following circuits and ground.
 - Connector C1:
 - Seat cushion heat control circuit terminal A
 - Seat cushion cool control circuit terminal B
 - Seat back heat control circuit terminal C
 - Seat back cool control circuit terminal D
 - Connector C2:
 - Seat cushion temperature sensor signal circuit terminal 2
 - Seat back temperature sensor signal circuit terminal 4
 - Connector C3:
 - Seat cushion blower motor speed control circuit terminal 3
 - Seat back blower motor speed control circuit terminal 4
 - Blower motor supply voltage circuit terminal 8
 - If less than infinite, test the appropriate circuit for a short to ground.
- 8. Connect the (C1, C2, C3) harness connectors to the CCS module.
- 9. Disconnect the harness connector at the seat cushion ventilation heat and cool module.
- 10. Ignition OFF, test for less than 5 ohms of resistance between the blower motor low reference circuit terminal 4 and ground.
 - If greater than 5 ohms, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the climate control module.
- 11. Ignition ON, test for 4.8-5.2 volts between the temperature sensor signal circuit terminal 5 and ground.
 - If greater than 5.2 volts, test the signal circuit for a short to voltage. If the circuit tests normal, replace the CCS module.
 - If less than 4.8 volts, replace the CCS module.

IMPORTANT: The ignition must be cycled OFF then ON between each test in order to reset the CCS module.

- 12. Ignition ON, connect a test lamp between the following control circuits and ground. The test lamp should illuminate or slowly illuminate for approximately 2 to 4 seconds after the switch is pressed. On the heat control circuit, the test lamp may exhibit a 4 second delay before it starts to illuminate.

Press the HEAT switch for heat control and the COOL switch for cool control.

- Terminal 1 seat cushion heat control circuit
- Terminal 3 seat cushion cool control circuit
- If the test lamp does not illuminate, replace the CCS module.
- If the test lamp is always ON, test the appropriate control circuit for a short to voltage. If the circuit tests normal, replace the CCS module.

IMPORTANT: The ignition must be cycled OFF then ON between each test in order to reset the CCS module.

13. Connect a test lamp between the following circuits and ground. The test lamp should illuminate or slowly illuminate for approximately 5 seconds after pressing the HEAT switch.
 - Terminal 2 seat cushion blower motor supply voltage circuit
 - Terminal 7 seat cushion blower motor speed control circuit
 - If the test lamp does not illuminate, test the appropriate circuit for an open/high resistance. If the circuit tests normal, replace the CCS module.
 - If the test lamp is always ON, test the appropriate circuit for a short to voltage. If the circuit tests normal, replace the CCS module.
14. Connect the harness connector to the seat cushion ventilation heat and cool module.
15. Disconnect the harness connector at the seat back ventilation heat and cool module.
16. Ignition OFF, test for less than 5 ohms of resistance between the blower motor low reference circuit terminal 4 and ground.
 - If greater than 5 ohms, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the CCS module.
17. Ignition ON, test for 4.8-5.2 volts between the temperature sensor signal circuit terminal 5 and ground.
 - If greater than 5.2 volts, test the signal circuit for a short to voltage. If the circuit tests normal, replace the CCS module.
 - If less than 4.8 volts, replace the CCS module.

IMPORTANT: The ignition must be cycled OFF then ON between each test in order to reset the CCS module.

18. Ignition ON, connect a test lamp between the following control circuits and ground. The test lamp should illuminate or slowly illuminate for approximately 4 seconds after the switch is pressed. On the heat control circuit, the test lamp may exhibit a 4 second delay before it starts to illuminate.

Press the HEAT switch for heat control and the COOL switch for cool control.

- Terminal 1 seat back heat control circuit
- Terminal 3 seat back cool control circuit
- If the test lamp does not illuminate, replace the CCS module.
- If the test lamp is always ON, test the appropriate control circuit for a short to voltage. If the circuit tests normal, replace the CCS module.

IMPORTANT: The ignition must be cycled OFF then ON between each test in order to reset the CCS module.

19. Connect a test lamp between the following circuits and ground. The test lamp should illuminate or slowly illuminate for approximately 5 seconds after pressing the HEAT switch.
 - Terminal 2 seat back blower motor supply voltage
 - Terminal 7 seat back blower motor speed control
 - If the test lamp does not illuminate, test the appropriate circuit for an open/high resistance. If the circuit tests normal, replace the CCS module.
 - If the test lamp is always ON, test the appropriate circuit for a short to voltage. If the circuit tests normal, replace the CCS module.
20. If all circuits test normal, test or replace the appropriate ventilation heat and cool module.

Heated/Cooled Seats Inoperative

°C	°F	OHMS
Temperature vs Resistance Values (Approximate)		
60°	140°	319.9
50°	122°	433.1
40°	104°	596.6
30°	86°	837.5
20°	68°	1200
10°	50°	1757
0°	32°	2633
-10°	14°	4047
-20°	-4°	6401
-30°	-22°	10,450
-40°	-40°	17,670

Component Testing

Heated and Cool Seat Switch

1. Ignition OFF, disconnect the (C4) harness connector at the door module.
2. Test for infinite resistance between the following switch signal circuits and the low reference circuit terminal 4 with the switch in the open position.
 - Terminal 7 heated seat back only mode switch signal
 - Terminal 6 heated seat back cushion heat switch signal
 - Terminal 3 heated seat cool switch signal
 - If less than infinite resistance, replace the heated and cooled seat switch.
3. Test for less than 2 ohms between the following switch signal circuits and the low reference circuit terminal 4 with the switch in the closed position.
 - Terminal 7 heated seat back only mode switch signal
 - Terminal 6 heated seat back cushion heat switch signal
 - Terminal 3 heated seat cool switch signal
 - If greater than 2 ohms for any of the tests, replace the heated and cooled seat switch.

Ventilation Heat and Cool Module

1. Ignition OFF, disconnect the harness connectors at the seat cushion and seat back ventilation heat and cool modules.

IMPORTANT: If the resistance is measured with the seat still warm or cool, the resistance values will vary. At 68°F (20°C), the nominal resistance value is 1200 ohms +/-5 percent. For hotter or colder ambient temperatures, refer to the Temperature vs Resistance in Heated/Cooled Seats Inoperative table. The delta resistance values between the seat cushion and seat back temperature sensors should not be greater than 2000 ohms.

2. Test for 300 ohms - 18K ohms of resistance between the temperature sensor signal circuit terminal 5 and the low reference circuit terminal 8.
 - If the resistance is not within the specified range, replace the ventilation heat and cool module.

IMPORTANT: The test leads must be connected in the correct polarity, otherwise lower out of range values will appear. Use the Positive Lead for the COOL control circuit and the Negative Lead for the HEAT control circuit. If the resistance is measured with the seat still warm or cool, the resistance values will vary even if the system was

powered up for just a few seconds. The TED must be allowed to stabilize to room temperature prior to a measurement. The following conditions will change the resistance to out of range values:

- The test leads are incorrectly connected
- Air blowing across the TED.
- Measuring the resistance at other than room temperature of 70°F.
- Holding the TED portion of the heated and cool ventilation module in your hand.

In hotter or colder climates where room temperature conditions of 70°F (21°C) may be unattainable, resistance values may read above the specified range. Use a heat gun or a blower to warm or cool the TED while measuring the resistance. The resistance values should slowly lower toward the specified range.

3. Test for 0.9-10.0 ohms of resistance between the heat control circuit terminal 1 and the cool control circuit terminal 3.
 - o If the resistance is not within the specified range, replace the ventilation heat and cool module.

IMPORTANT: The test leads must be connected in the correct polarity, otherwise higher out of range values will appear. Use the Positive Lead for the supply voltage circuit and the Negative Lead for the ground circuit.

4. Test for 6-9K ohms of resistance between blower motor supply voltage circuit terminal 2 and the low reference circuit terminal 4.
 - o If the resistance is not within the specified range, replace the ventilation heat and cool module.

IMPORTANT: The test leads need to be connected in the correct polarity, otherwise higher out of range values will appear. Use the Positive Lead for the speed control circuit and the Negative Lead for the ground circuit.

5. Test for 290-420K ohms of resistance between blower motor speed control circuit

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terminal 7 and the low reference circuit terminal 4.

- If the resistance is not within the specified range, replace the ventilation heat and cool module.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Heated and Cooled Seat Switch Replacement**
- **Driver and Passenger Seat Cushion Ventilation Heat and Cool Blower Replacement**
- **Driver and Passenger Seat Back Ventilation Heat and Cool Blower Replacement**
- **Control Module References** for CCS module and MSM replacement, setup and programming

HEATED/COOLED SEAT SWITCH INDICATOR MALFUNCTION

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

Heated/Cooled Seat Switch Indicator Malfunction

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Heated Seat Back Only Mode Indicator Control	4	4	4 5	-
Heated Seat Back Only Mode Switch Signal	2	2	2	-
Heated Seat Back/Cushion Indicator Control	4	4	4 5	-
Heated Seat Back/Cushion Switch Signal	1	1	1	-
Heated Seat Cool Indicator Control	4	4	4 5	-
Heated Seat Cool Switch Signal	3	3	3	-
Heated Seat High Temperature Indicator Control	4	4	4 5	-
Heated Seat Low				

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Temperature Indicator Control	4	4	4 5	-
Heated Seat Medium Temperature Indicator Control	4	4	4 5	-
Seat Temperature Control Switch Ground	1	1	-	-
1. Heated seat back/cushion inoperative 2. Heated seat back only mode inoperative 3. Heated seat cool mode inoperative 4. Heated seat switch indicator inoperative 5. Heated seat switch indicator always on				

Circuit/System Description

The driver and front passenger climate control seats are controlled by separate heated and cooled seat switches. The switches are located on the door panels. When a heated or cool seat switch is pressed, ground is momentarily applied through the switch contacts and the switch signal circuit to the door module. In response to this signal, the module then sends a message to the memory seat module via the low speed GMLAN serial data line indicating the heat or cool seat request. The door module then applies voltage through the appropriate indicator control circuits to the heated seat switch illuminating the appropriate indicators.

Reference Information

Schematic Reference

- **Driver Seat Schematics**
- **Passenger Seat Schematics**

Connector End View Reference

Power Seat Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**

- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

1. Ignition ON with the heated and cooled seat OFF, the heated and cooled seat switch mode indicators should not be illuminated.
 - If illuminated, refer to **Heated and Cooled Seat Switch Indicators Always On** in circuit/System Testing.
2. Ignition ON, use a scan tool to observe the appropriate Seat Switch Seat Indicator Cmd. parameter while pressing the heated seat switch. The reading should change between Off and On.
 - If not On, refer to **Driver Heated and Cooled Seat Switch Indicators Inoperative**.

Circuit/System Testing**Driver Heated and Cooled Seat Switch Indicators Inoperative**

1. Ignition OFF, disconnect the harness connector at the heated and cooled seat switch.
2. Ignition OFF, test for less than 10 ohms of resistance between the heated and cooled seat switch low reference circuit terminal 3 and ground.
 - If greater than 10 ohms, test the ground circuit for an open/high resistance. If the circuit tests normal, replace the door module.
3. Connect the harness connector at the heated and cooled seat switch.
4. Ignition OFF, disconnect the (C4) harness connector at the door module.
5. Connect a 3A fused jumper wire between the low reference circuit terminal 4 and ground.
6. Connect a test lamp between each indicator control circuit terminal and battery voltage. Each indicator should illuminate when tested.
 - If any indicator does not illuminate, test the appropriate control circuit for short to ground or an open/high resistance. If the circuit test normal, replace the heated and cooled seat switch.
7. If all indicators illuminate, replace the door module.

Passenger Heated and Cooled Seat Switch Indicators Inoperative

1. Ignition OFF, disconnect the harness connector at the heated and cooled seat switch.
2. Ignition OFF, test for less than 10 ohms of resistance between the heated seat switch low reference circuit terminal 5 and ground.
 - If greater than 10 ohms, test the ground circuit for an open/high resistance. If the

circuit tests normal, replace the door module.

3. Connect the harness connector at the heated and cooled seat switch.
4. Ignition OFF, disconnect the (C4) harness connector at the door module.
5. Connect a 3A fused jumper wire between the low reference circuit terminal 4 and ground.
6. Connect a test lamp between each indicator control circuit terminal and battery voltage. Each indicator should illuminate when tested.
 - o If any indicator does not illuminate, test the appropriate control circuit for short to ground or an open/high resistance. If the circuit test normal, replace the heated and cooled seat switch.
7. If all indicators illuminate, replace the door module.

Heated and Cooled Seat Switch Indicators Always On

1. Ignition OFF, disconnect the harness connector at the heated and cooled seat switch.
2. Ignition ON, heated and cool seat OFF. Test for less than 0 volts between the illuminated indicator control circuit and ground.
 - o If greater than 0 volts, test the control circuit for a short to voltage. If the circuit tests normal, replace the door module.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Heated and Cooled Seat Switch Replacement**
- **Control Module References** for door module replacement, setup and programming

HEATED/COOLED SEAT ALWAYS ON

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

Heated/Cooled Seat Always On

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Battery Positive Voltage	1	1	-	-
Ignition 3 Voltage	1	1	-	-
Driver/Passenger Seat Blower Supply Voltage	2	2	-	-
Left Heated/Cooled Seat Mode Signal	2	2	2	-

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Right Heated/Cooled Seat Mode Signal	2	2	2	-
Heated Seat Back Only Mode Switch Signal	5	5	5	-
Heated Seat Cool Switch Signal	4	4	4	-
Heated Seat Back Cushion Switch Signal	3	3	3	-
Seat Back Temperature Sensor Signal	2	2	2	-
Seat Cushion Temperature Sensor Signal	2	2	2	-
Seat Back Heated/Cool Ventilation Module Cool Control	1	2	-	-
Seat Back Heated/Cool Ventilation Module Heat Control	1	2	-	-
Seat Cushion Heated/Cool Ventilation Module Cool Control	1	2	-	-
Seat Cushion Heated/Cool Ventilation Module Heat Control	1	2	-	-
Seat Back Blower Speed Control	2	2	6	-
Seat Cushion Blower Speed Control	2	2	6	-
Heated Seat Switch Low Reference	-	2	-	-
Seat Blower Low Reference	-	2	-	-
Seat Back Temperature Sensor Low Reference	-	2	-	-
Seat Cushion Temperature Sensor Low Reference	-	2	-	-
Module Ground	-	1	-	-

1. Driver and passenger heated/cooled seats are inoperative

2. Seat heat and cool modes are inoperative
3. Seat heat mode is inoperative
4. Seat cool mode is inoperative
5. Heated/cooled seat inoperative - Back Only Mode
6. Heated/cooled seats temperature adjustment is inoperative or the blower is always On

Circuit/System Description

The heat and cool seat functions for both driver and passenger seats are controlled by the climate control seat module that is located under the passenger seat cushion. When a driver or passenger heat or cool seat switch is pressed, a low reference signal is applied through the switch signal circuit to the door control module. In response to the switch input, the door module sends a GMLAN message to the memory seat module (MSM) indicating the heat/cool seat request. The MSM then sends a pulse width modulation (PWM) signal through the heated/cooled seat mode signal circuit to the climate control seat (CCS) module. The CCS module then applies battery positive voltage to the seat cushion and seat back thermal electronic devices (TEDs) and a pre-determined voltage to the blower motors. To determine seat temperature, the CCS module supplies a 5 volt signal and a low reference to the temperature sensors that are attached to each TED. The temperature sensors are variable resistors, their resistance changes as the temperature of the seat changes. Then based on the seat temperature, the CCS module controls the voltage level that it applies to the TEDs and blower motors.

Diagnostic Aids

- In order to perform valid tests when diagnosing the climate control seat CCS system, the ignition must be cycled OFF then ON between each test in order to reset the CCS module.
- A short to battery voltage on a temperature sensor signal circuit may open the sensor.

Reference Information**Schematic Reference**

- **Driver Seat Schematics**
- **Passenger Seat Schematics**

Connector End View Reference**Power Seat Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**

- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the appropriate seat cushion or seat back ventilation heat and cool module.
2. Connect a test lamp between the control circuit terminal 7 and ground.

IMPORTANT: The ignition must be cycled OFF then ON between each test in order to reset the CCS module.

3. Ignition ON, press the HEAT switch. The test lamp should illuminate or slowly illuminate for approximately 5 seconds.
 - If the test lamp does not illuminate, test the control circuit for an open/high resistance. If the circuit tests normal, replace the CCS module.
 - If the test lamp is always ON, test the control circuit for a short to voltage. If the circuit tests normal, replace the CCS module.
4. If all circuits test normal, replace the CCS module.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

Control Module References for CCS module replacement, setup and programming.

HEATED SEAT INOPERATIVE**Diagnostic Fault Information**

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

Heated Seat Inoperative

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Heated Seat Back/Cushion Switch Signal	1	1	1	-

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Heated Seat Back Only Mode Switch Signal	2	2	2	-
Heated Seat Back Only Mode Indicator Control	3	3	3 4	-
Heated Seat Back/Cushion Indicator Control	3	4	4 5	-
Heated Seat Cool Indicator Control	3	3	3 4	-
Heated Seat High Temperature Indicator Control	3	3	3 4	-
Heated Seat Low Temperature Indicator Control	3	3	3 4	-
Heated Seat Medium Temperature Indicator Control	3	3	3 4	-
Heated Seat Switch Low Reference	1	1	-	-
1. Heated seat back/cushion inoperative 2. Heated seat back only mode inoperative 3. Heated seat switch indicator inoperative 4. Heated seat switch indicator always on				

Circuit/System Description

The driver and front passenger heated seats are controlled by separate heated seat switches. The switches are located on the door panels. When a heated seat switch is pressed, ground is momentarily applied through the switch contacts and the switch signal circuit to the door module. In response to this signal, the door module then sends a message via the low speed GMLAN serial data line to the memory seat module indicating the heat seat request. The door module then applies voltage through the appropriate indicator control circuits to the heated seat switch illuminating the appropriate indicators.

Reference Information**Schematic Reference**

- **Driver Seat Schematics**
- **Passenger Seat Schematics**

Connector End View Reference

Power Seat Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

Ignition ON, observe the following scan tool parameters in the Driver Door Switch and Passenger Door Switch input data lists while pressing and releasing the related switch. The readings should change between Active and Inactive.

- Seat Back Heat Mode Sw.
- Seat Heat Mode Sw.

Circuit/System Testing

Driver Heated Seat Inoperative

1. Ignition OFF, disconnect the harness connector at the driver heated seat switch.
2. Ignition OFF, test for less than 10 ohms of resistance between the heated seat switch low reference circuit terminal 3 and ground.
 - If greater than 10 ohms, test the ground circuit for an open/high resistance. If the circuit tests normal, replace the door module.
3. Ignition ON, verify the scan tool Seat Heat Mode Sw. parameter is Inactive.
 - If not Inactive, test the signal circuit terminal 8 for a short to ground. If the circuit tests normal, replace the door control module.
4. Install a 3A fused jumper wire between the signal circuit terminal 8 and ground. Verify the scan tool Seat Heat Mode Sw parameter is Active.
 - If not Active, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the door control module.
5. Ignition ON, verify the scan tool Seat Back Heat Mode Sw. parameter is Inactive.
 - If not Inactive, test the signal circuit terminal 11 for a short to ground. If the circuit tests normal, replace the door control module.

6. Install a 3A fused jumper wire between the signal circuit terminal 11 and ground. Verify the scan tool Seat Back Heat Mode Sw parameter is Active.
 - If not Active, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the door control module.
7. If all circuits test normal, test or replace the heated seat switch.

Passenger Heated Seat Inoperative

1. Ignition OFF, disconnect the harness connector at the passenger heated seat switch.
2. Ignition OFF, test for less than 10 ohms of resistance between the heated seat switch low reference circuit terminal 5 and ground.
 - If greater than 10 ohms, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the door module.
3. Ignition ON, verify the scan tool Seat Heat Mode Sw. parameter is Inactive.
 - If not Inactive, test the signal circuit terminal 14 for a short to ground. If the circuit tests normal, replace the door control module.
4. Install a 3A fused jumper wire between the signal circuit terminal 14 and ground. Verify the scan tool Seat Heat Mode Sw parameter is Active.
 - If not Active, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the door control module.
5. Ignition ON, verify the scan tool Seat Back Heat Mode Sw. parameter is Inactive.
 - If not Inactive, test the signal circuit terminal 11 for a short to ground. If the circuit tests normal, replace the door control module.
6. Install a 3A fused jumper wire between the signal circuit terminal 11 and ground. Verify the scan tool Seat Back Heat Mode Sw parameter is Active.
 - If not Active, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the door control module.
7. If all circuits test normal, test or replace the heated seat switch.

Component Testing**Driver Heated Seat Switch**

1. Ignition OFF, disconnect the harness connector at the heated seat switch.
2. Test for infinite resistance between the following switch signal circuits and the low reference circuit terminal 3 with the switch in the open position.
 - Terminal 8 heated seat back cushion heat switch signal
 - Terminal 11 heated seat back only mode switch signal
 - If less than infinite resistance, replace the heated seat switch.
3. Test for less than 2 ohms between the following switch signal circuits and the low

reference circuit terminal 3 with the switch in the closed position.

- Terminal 8 heated seat back cushion heat switch signal
- Terminal 11 heated seat back only mode switch signal
- If greater than 2 ohms for any of the tests, replace the heated seat switch.

Passenger Heated Seat Switch

1. Ignition OFF, disconnect the harness connector at the heated seat switch.
2. Test for infinite resistance between the following switch signal circuits and the low reference circuit terminal 5 with the switch in the open position.
 - Terminal 14 heated seat back cushion heat switch signal
 - Terminal 11 heated seat back only mode switch signal
 - If less than infinite resistance, replace the heated seat switch.
3. Test for less than 2 ohms between the following switch signal circuits and the low reference circuit terminal 5 with the switch in the closed position.
 - Terminal 14 heated seat back cushion heat switch signal
 - Terminal 11 heated seat back only mode switch signal
 - If greater than 2 ohms for any of the tests, replace the heated seat switch.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Heated and Cooled Seat Switch Replacement**
- **Control Module References** for door module replacement, setup and programming

REPAIR INSTRUCTIONS

SEAT REPLACEMENT

Fig. 51: View Of Seat

Courtesy of GENERAL MOTORS CORP.

Seat Replacement

Callout	Component Name
NOTE: Refer to <u>Fastener Notice</u> . Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> . Preliminary Procedure 1. Disable the SIR system. Refer to <u>SIR Disabling and Enabling</u> and <u>SIR Disabling and Enabling</u> . 2. Remove the front seat adjuster covers. Refer to <u>Front Seat Adjuster Track Finish Cover Replacement</u> . 3. Disconnect the seat belt from the seat. Refer to <u>Seat Belt Retractor Pretensioner Replacement - Front</u> .	
1	Bolt, Front Seat Assembly (Qty: 2) Tighten: 45 N.m (33 lb ft)
2	Seat Assembly Tip: Disconnect the electrical connectors.